APR 4 1928

AUTOMOTIVE INDUSTRIES

Volume 58
Number 13

PUBLISHED WEEKLY AT CHESTNUT AND 56TH STREETS
PHILADELPHIA, MARCH 31, 1928

35c a copy
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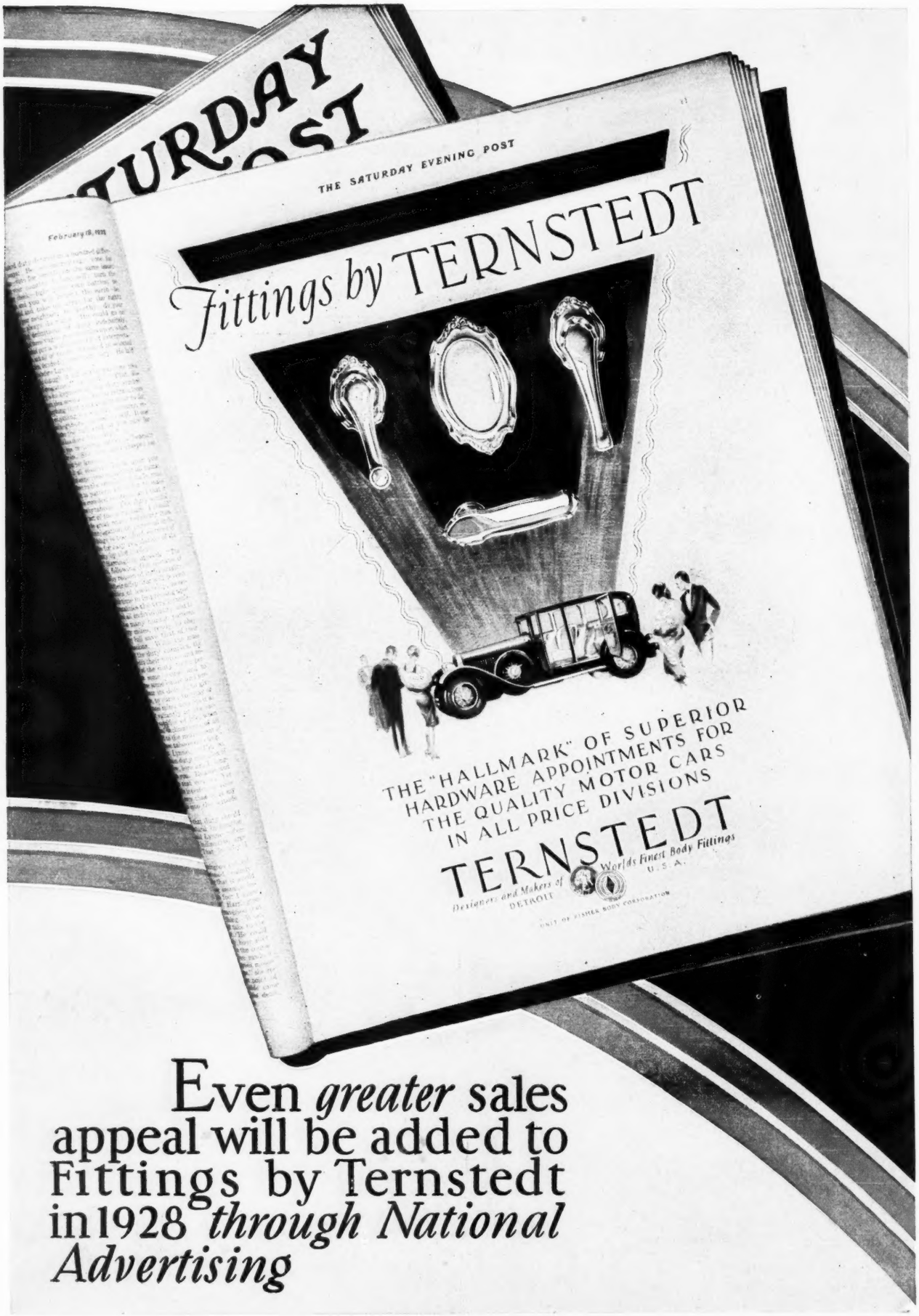

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AUTOMOTIVE INDUSTRIES

VOLUME 58 *Philadelphia, Saturday, March 31, 1928* NUMBER 13

Privately Operated *Toll Bridges Opposed* on Economic Grounds

Bridge profits made possible through location in relation to highways built with public funds should not be given over to private interests, highway experts say.

By Norman G. Shidle

AT the beginning of 1928 there were 233 toll bridges in operation in the United States, 86 of which have been built within the last ten years; 191 are privately owned. At present there are 29 new toll bridges under construction—20 of which are private enterprises—and 163 proposed for construction. Included in this number proposed for construction are all projected bridges regarding which some definite step has been taken, such as the filing of an application for franchise or the organization of a company to finance the construction, at the time of completion of a survey made recently by the Bureau of Public Roads.

The present session of Congress has seen the passage of a large number of new toll bridge bills, a number of which turn over to private interests the profit-making concessions to build and operate these bridges.

The interests of the general public as well as those of the automotive industry seem likely to be ill served by the continued establishment of toll bridges, particularly when they are given over to private interests for money-making purposes. In those cases where bridges actually are needed as economic units in the development of our highway systems, and yet cannot apparently be procured by the ordinary methods of highway financing, it would seem highly desirable that such toll operation as may exist be in the hands of state or municipal authorities.

The arguments against the privately owned toll bridge from the standpoint of public interest are many and varied. Among the most important may be listed the following:

1. Toll bridges usually are built at points where traffic is dense, made so by the good highways already developed and built with public funds. The value of the bridge from a profit-making standpoint was created by public expenditures for improvement of the roads which lead to the bridges.

2. Bridges are an integral part of our national highway system which never could have been built except through public enterprise and initiative. The public should not be compelled to pay profits to private bridge operators long after it has paid in tolls for the bridges constructed.

3. Any bridge built by private interests also probably can be built and operated by public interests, there being an active market for revenue bonds which are secured and retired with no other funds than the revenues derived from the tolls collected.

4. Where the bridges are built by public agencies there is assurance of open competition and awarding of the contract to the lowest responsible bidder, a condition which, authorities say, has been noticeably lacking in much of the private construction upon which the public is asked to pay dividends in the form of tolls.

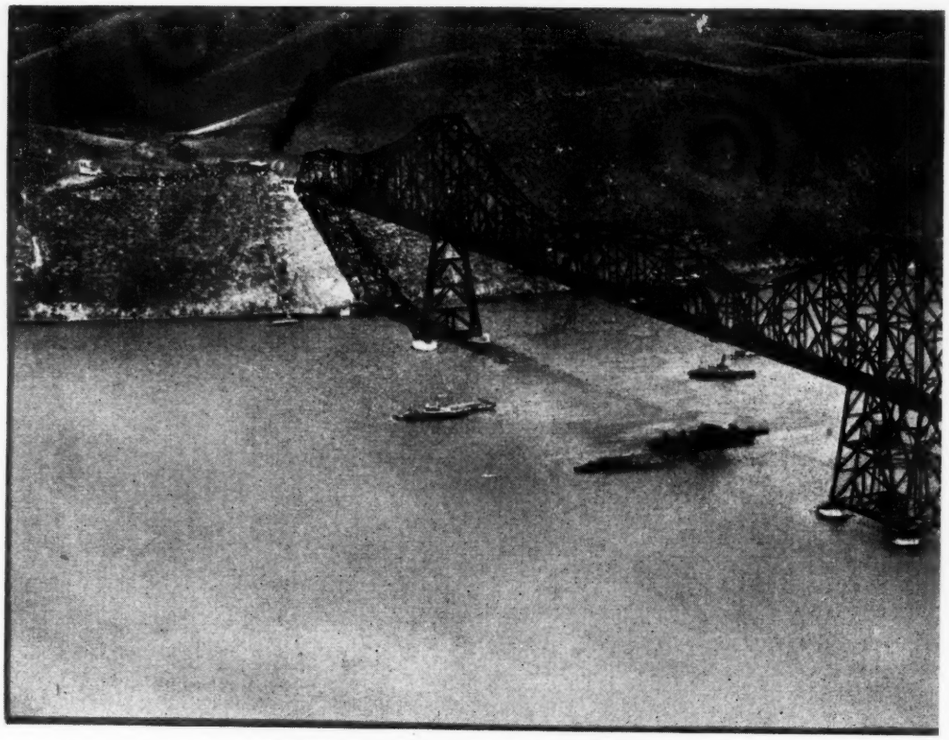
This whole matter of toll bridges is assuming an importance which every part of the automotive industry may well take time to recognize. Anything which tends to add an uneconomic cost to the expense of operating a motor vehicle cannot be lightly passed over in this era of the new competition of industry against industry for a greater share of the consumers' dollar. In its broader aspects the toll bridge question perhaps is one for primary attention from automotive manufacturers, but the dealers and distribu-

tors of the country have a very real stake in the matter since the passage of toll bridge bills has been so great, largely, perhaps, because each one in itself has been a local matter.

While some voices have been raised in Congress against the principle of giving toll bridge concessions to private interests, organized opposition seems not to have arisen, chiefly because of the local character of each individual proposal. It is difficult to interest the Congressman from Oregon in a bridge proposed to span a river in South Carolina or vice versa. The tendency is to accept local judgment on local matters. As a result it is probable that a number of the bills have not had nearly as careful scrutiny from Congress as a whole as would bills which in themselves were of more national character.

The report on H. R. 8227, for example, is a case in point. After a summary of the bill, the report states: "The bill as amended has the approval of the Agriculture Department, as will appear from the letter attached and which is made a part of this report."

Then the letter which follows from the Agriculture Department closes with this statement: "The department, therefore, would regret to see an authorization granted for a new private toll bridge at this point."



From the standpoint of the automotive industry, elimination of toll bridges wherever necessary, seems the most constructive program. This at least is the basis of the men who have been students of the highway de

Many Similar Cases

Numerous cases similar to this are to be found in reports of toll bridge bills as presented to the members of Congress. The possibility of resulting confusion seems rather great in view of the haste with which some representatives might conceivably scan bills of this kind which are purely local in character and have to do with regions entirely foreign to the district which they themselves happen to represent.

There are cases, according to reports from reliable sources in Washington, where the persons getting the privilege of building a bridge have not had the slightest intention of exercising that privilege themselves. Their sole object has been to get a concession at a desirable point and then sell it to the highest bidder.

The Burtness Bill (H.R. 107) known as the "General Bridges Bill," now before Congress, is designed better to protect the public interest in the granting of toll bridge franchises by making certain that no such bridges can be constructed on Federal-aid or state highway systems without the approval of the state highway departments concerned. In the case of interstates bridges, if state highway departments fail to agree, the approval of the Secretary of Agriculture becomes necessary. This would insure, at least, that the bodies best informed on road development from a practical and public interest standpoint would have the final word in the important matter of granting permission for the erection and operation of toll bridges.

A bill introduced by Edward E. Denison of the House Committee on Interstate and Foreign Commerce provides that jurisdiction of toll bridges, as regards toll rates, shall be in the hands of the Interstate Commerce Commission, which body in the past has had no relation whatever to highway development and highway matters in general. It also specifically permits Congressional authorizations to be sold, assigned or transferred.

From the standpoint of the automotive industry, however, elimination of toll bridges wherever possible and insistence on government toll bridges whenever collection of tolls is necessary seems the most constructive program. This at least is the basis of the program which is being indorsed by the National Automobile Chamber of Commerce, the American Automobile Associatiion and by many influential men in Washington who have been close students of the highway development situation over a long period of years.

The position of the N.A.C.C. is well illustrated in the statement made on this subject recently by Alfred Reeves, General Manager, when he said: "This move toward toll bridges should be blocked before it goes further. Every citizen should write to his Congressman asking him to vote against toll roads and toll

bridges, never permitting the former and allowing the latter only under the most strict supervision. Unless we are careful the national highway system which has been the proud boast of the American Nation may soon be but a series of toll gates."

possible, and insistence on government toll bridges whenever collection of tolls is program which is being indorsed by the N.A.C.C., the A.A.A. and by many influential velopment situation over a long period of years

The A.A.A. believes that "while it is unquestionably true that many toll bridges have given and are giving a needed public service at a fair cost, it is equally true that scores of them levy an exorbitant tribute on the motoring public—a tribute sometimes amounting to 300 per cent on the capital investment." The association is opposed to the granting of toll bridge franchises to private interests, except in such instances where it is clearly proved that units of Government cannot raise money or are unwilling to raise it to construct these bridges in cooperation with the Federal government, even if units of government have to operate such a bridge on a toll basis for a period of time.

An Important Point

This latter point is particularly important from the standpoint of the general public in the locality affected by the bridge. If the bridge is built with the help of Federal aid, the amount of tolls or the length of time over which tolls would have to be collected to pay for the structure, obviously would be only about half that necessary if the full cost were to be borne by the local community.

It is worth noting, moreover, that practically every agency which has been in close touch with the development of our great national highway system and which has a really detailed knowledge of these matters is opposed to the private toll bridge idea. While no organized opposition to these bills seems to have developed in Congress, as previously mentioned, it should be noted that Cassius C. Dowell, of Iowa, chairman of the roads committee of the House, is among those who have publicly questioned the wisdom of private bridge grants. Excerpts from a debate which took place on the floor of the House on December 19, 1927, give a good picture of some Congressional ideas on the subject as well as a fairly good summary of the opinion on both sides of the case. These excerpts follow:

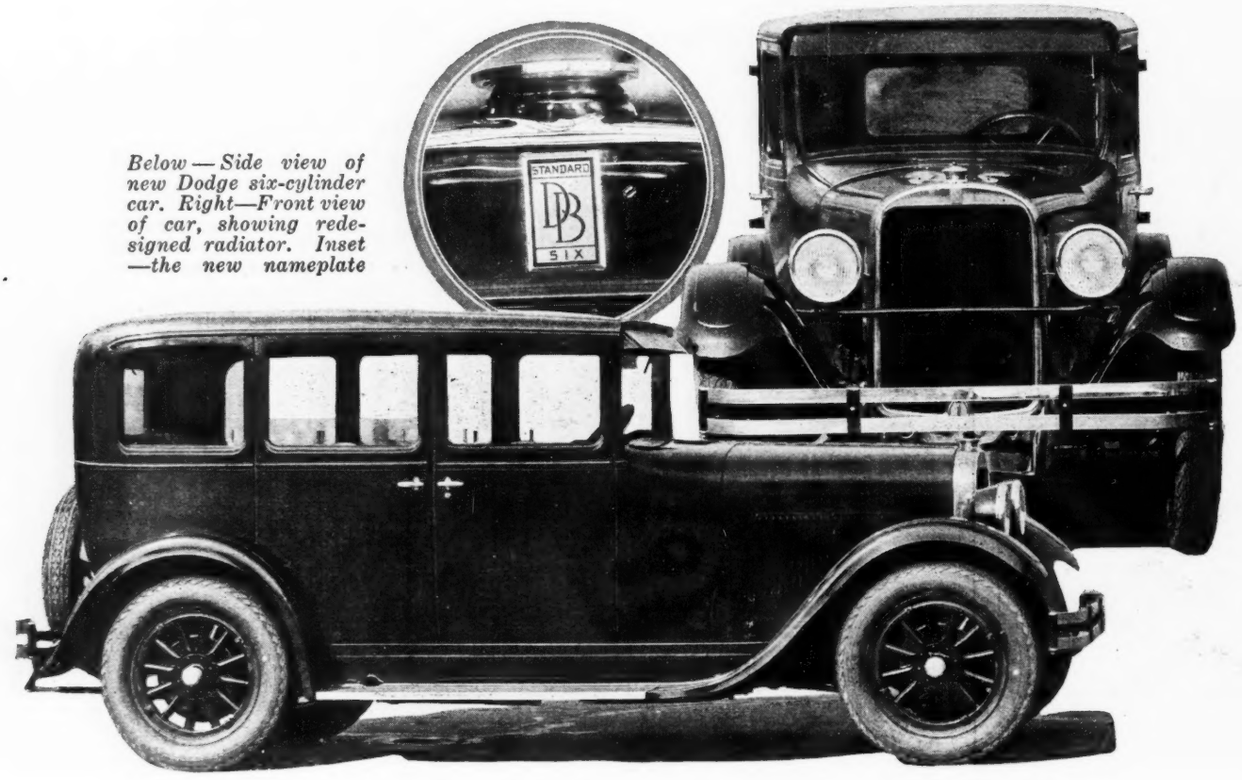
MR. LAGUARDIA: Is it the purpose of the committee to adopt some policy in regard to these bridge bills? As you gentlemen know, there is no character of bills that come before the House that receives less attention than do these bridge bills. Very often we find very valuable rights are being given away to private individuals or corporations when, as a matter of fact, it has been demonstrated that the best policy for the community as well as for the Government was that the bridge be constructed and operated by the Government or some agency—like the tunnel between New York and New Jersey, which is operated with great success.

Can the gentleman from Illinois inform us what policy the committee will adopt so that we may rely entirely on the committee and not have to examine every bridge bill before us?

MR. DENISON: The policy of the committee is to grant the consent of Congress for the construction of a bridge by the state government or a political subdivision thereof whenever the state or municipality asks for it. We prefer to give the franchise to the Government or a political subdivision, or to some Government agency, like the highway commission; but if they do not ask for it, and if there is public sentiment in favor of the construction of the bridge, and private individuals ask for the authority to construct and build the bridge, the policy of our committee is to grant it. But every bill contains a reservation of the right in favor of the public to take it over at any time, after a limited number of years and operate it as a free bridge.

THE Monthlery automobile track in France, which has been in financial difficulties a number of times during the past year, has finally passed into bankruptcy, all efforts to arrange a composition with creditors having proved futile.

Dodge Announces *New* Light



Below — Side view of new Dodge six-cylinder car. Right—Front view of car, showing redesigned radiator. Inset —the new nameplate

Standard model offered at prices ranging from $875 to $970. Engine has piston displacement of 208 cu. in. and 5.18 to 1 compression. Steeldraulic four-wheel brakes.

DODGE BROTHERS, INC., has officially announced the placing in production of a new light "Standard" six-cylinder model which, together with the Senior and the Victory, brought out during the past nine months, will give the firm three lines of six-cylinder cars.

The new model will take the place of the Dodge four, the manufacture of which has been discontinued. It is priced to compete in the low-priced six-cylinder field, prices for the four body types offered ranging from $875 to $970.

Aside from such engineering features as a seven-bearing crankshaft and bore and stroke dimensions which are nearly alike—which results in comparatively large bearing areas—the design embodies a number of features not usually found in cars in the lower price range, such as completely-machined combustion chambers, a crankshaft that is machined all over, Nelson-type aluminum alloy pistons, an AC oil filter and ball bearings throughout the transmission gear and the rear axle.

Bodies are conventional in design, and of the all-steel type. The radiator shell is rather deep at the top and has a false bottom.

The four models now being offered include a four-door sedan ($895), a de luxe edition thereof ($970), a two-passenger coupe with fabric leather upholstery ($875), and a convertible cabriolet $945).

Production is rapidly approaching capacity figures, a schedule of 1000 Standard Sixes per day going into effect on April 1, the maximum being 1650 daily.

Cylinders 3⅜ by 3⅞ In.

Engine cylinder dimensions are 3⅜ x 3⅞ in., which correspond to a piston displacement of 207.99 cu. in. With its compression ratio of 5.181 to 1 and the relatively high speed, the engine has ample power and assures excellent accelerating characteristics. The aluminum pistons weigh only 17¾ oz. each, and have an overall length of 3 15/16 in. Four rings are used per piston, three of these being ⅛ in. wide, while the lowest is an oil control ring 5/32 in. in width. The piston pins are located in the pistons by means of snap rings and ride in phosphor bronze bushings in the connecting rods. The connecting rods measure 8 in. between centers (more than twice the length of stroke). The big end bearing has a diameter of 2⅛ in., and a length of 1 21/64.

Six *to* Replace Four

By A. F. Denham

The completely machined crankshaft has a total weight of 52 lb. and is drilled for lubrication of the crankpin bearings. It is supported in seven bronze-backed babbitt-lined bearings which are 2⅜ in. in diameter, with the exception of the front one which has a diameter of 2¼ in. Bearing lengths are 1⅞ for the front, 1 23/32 for the center, 2 3/64 for the rear and 1 5/32 for all intermediate bearings. All bearings are of the removable type.

Cylinder block and crankcase are in one casting. The cylinder head is detachable and the compression chambers formed in it are completely machined. Valves are slightly inclined, which is said to increase the turbulence. The inlet valve has a clear diameter of 1½ in.; the (silchrome) exhaust valve, 1⅜ in. The lift is 5/16 in. Both have removable guides. Tappets are of the mushroom type, with chilled cast-iron heads. The camshaft itself is supported in four bearings of the following sizes:

	Diameter	Length
Front	2 1/16 in.	1½ in.
Second	2 3/64 in.	⅞ in.
Third	2 1/32 in.	⅞ in.
Fourth	1¾ in.	1¼ in.

Camshaft and generator are driven by chain. With 18 teeth on the crankshaft sprocket and 16 on the generator drive sprocket, the generator runs at 1⅛ times crankshaft speed. The generator and all other electrical units are of North-East manufacture, and a Bendix starter drive is used. Inlet and exhaust manifolds are a single casting; all corners of the inlet manifold are rounded off, and the exhaust manifold connects to a pressed-steel tubular muffler. Two makes of carburetor are in use at present, the Stewart and the Stromberg. Fuel feed is by the vacuum system from a 12-gal. tank at the rear of the chassis.

Engine lubrication is by pressure feed from the oil pump located in the lowest part of the sump, to the main bearings, camshaft and generator drive sprockets, front end chain, and oil filter. Crankpin bearings are lubricated through the drilled crankshaft from the main bearings, while pistons and cylinder walls, etc., are spray-lubricated from the crankpins. The oil capacity is six quarts. The cooling system also is conventional and has a capacity of 2⅞ gal. The water pump is located in the front end of the cylinder block and is combined with a four-bladed fan, the unit being driven by a V-belt from the crankshaft. Belt adjustment is accomplished by varying the distance between faces of the fan pulley, which is equivalent to varying the diameter of the pulley. The radiator is of the fin-and-tube type.

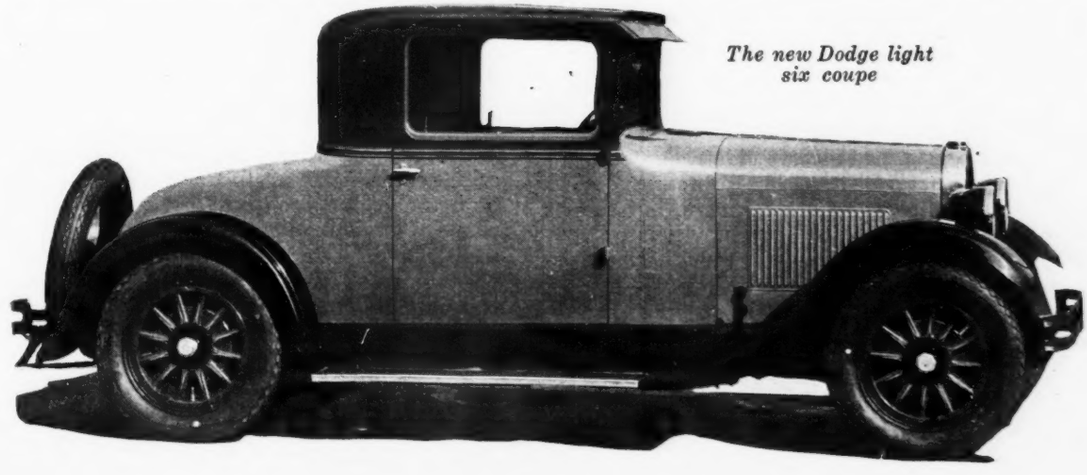
Four-point engine support is used, the front being supported by a pressed-steel plate immediately back of the chain housing cover. Both front and rear supports attach directly to pressed steel brackets riveted to the frame side members, these brackets being of the box type, with vertical bolts at the front and horizontal at the rear. The vertical load at the rear is taken by a flange on the motor boss which rests on the supporting bracket.

Combined with the engine are a 10 in. Borg & Beck single-plate clutch and a three-speed transmission. The latter, which has a standard S.A.E. shift, is of the same design as the transmissions used in other Dodge Brothers cars, with ball and roller bearings on the splined shaft and countershaft. Gear reductions are 1.705 to 1 in second, 3.419 to 1 in low, and 4.15 to 1 in reverse.

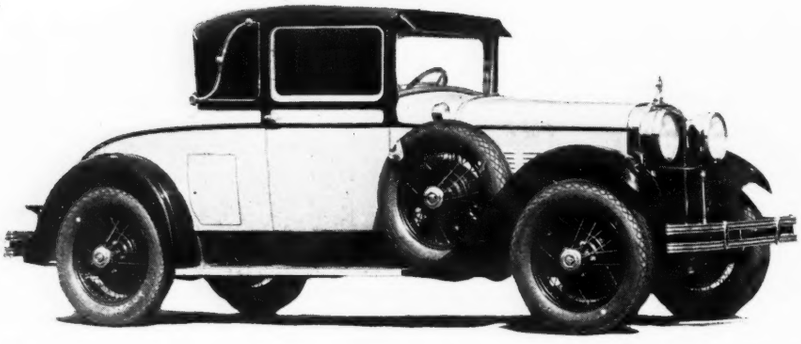
To meet production schedules, both Spicer and Mechanics Machine Co. propeller shafts are being used. There are two metal universal joints in each shaft. Hotchkiss drive is used.

Rear axles are of the semi-floating type, the bevel pinion shaft being straddle-mounted on ball bearings, while all other bearings are of the taper roller type. The final reduction is 4.454 to 1.

Midland Steeldraulic four-wheel service brakes are standard. These have 12 in. drums and take 2-in. lining. They are supplemented by a hand-operated brake on the propeller shaft, which has a diameter of 6¼ in. and takes 2½ in. lining. Springs are semi-elliptic all around, with lengths of 37 in. and 54 in. for the front and rear respectively. Steering knuckles are fitted with ball thrust bearings. Ball bearings are



The new Dodge light six coupe



This sport edition cabriolet listing at $1,720 has been added to its Senior line by Dodge Brothers. It is equipped with six wire wheels, fender wells, rumble seat, bumpers, shock absorbers, rear view mirror, automatic windshield wiper, stop light, cowl lamps and bands, fuel gage and clock. Upholstery is in genuine leather

also used in the steering mechanism, and the tie rods have ball and socket ends. The stearing gear itself is of the worm-and-sector type, produced by Gemmer. Chassis lubrication is by Zerk fittings.

Frame construction is entirely of pressed steel, there being no tubular members. Side channels have a maximum depth of 5½ in. with 2 in. flanges and are pressed of ⅛ in. stock. There are four pressed-steel cross-members altogether, supplemented by the rear and front engine supports, which virtually form two additional cross-members. The second of the regular cross-members is pierced, both for reduction in weight and to allow the propeller shaft to pass through it. In accordance with modern practice, the rear cross-member is in the shape of a wide plate which also forms the gasoline tank cover. An unusually rigid tire carrier of pressed steel is bolted to this rear plate. The left rear engine support bracket mounts the stop-light switch operated by the brake pedal.

Standard equipment consists of 29 x 5.00 in. tires, but it is understood that 31 x 5.25 tires are available if desired for sections of the country where road clearance is of particular importance. Wood wheels are standard on the sedan and the coupe, while the cabriolet is equipped with wire wheels, a fifth wheel being included in the equipment. In addition, standard equipment on all models includes an automatic windshield wiper, a combination tail and stoplight, a cowl ventilator, and a rear vision mirror. The de luxe sedan is fitted with bumpers and bumperettes, and shock absorbers. The starter button is placed on the lower part of the dash, in such a position that the accelerator pedal can be operated by the heel while the starter button is being depressed by the toe.

European Stock-Car Racing

WHILE most European nations are much more interested in races and competitions than is the case in the United States, and attach a considerable commercial importance to them, there are no true stock car events and no international stock car rules exist. The International Racing Board, which has its headquarters in Paris, has always sidetracked any definition of a stock car. There are a number of events indicated as being open to stock cars, but the individual organizers are free to draw up their own rules and these are generally accepted by the national or international controlling body.

The most important of the European stock car races is undoubtedly the 24-hour race at Le Mans for the Rudge Whitworth cup. The rules governing this indicate that competing cars must closely conform in every respect to the description appearing in the firm's commercial catalog published five months before the race is held. Having emphasized the point that the cars must conform to catalog description, the doors are thrown wide open by the announcement that "compression ratio, valve timing, the weight, shape, and material of rods and pistons, the diameter and lift of valves, the final gear ratio, can be altered as competitors may desire." This is the nearest Europe has been able to get to stock car rules.

The difficulty of drawing up and applying any such rules lies in small individual production and the ease with which changes in models can be made. While the really big producers are very restricted in the changes they can make to their cars in order to gain speed, hundreds of small makers find it an easy matter to modify existing types or to add special types produced in very small series, in order to become eligible for some particular race or competition.

When it has been stipulated that models used in races must be sold to the public, some of the biggest firms have not hesitated to catalog a special racing car and offer it for sale at a fancy price. In some cases this has been checkmated by the stipulation that a minimum number of these special cars must have been sold to the public during the year preceding the race.

The conclusion is that while stock car racing rules might be possible in America, it is almost impossible to draw them up and apply them in Europe, where the types of cars sold to the public vary from almost a pure racing mount to big production models designed and built with no special speed objects in view .

Coming—An Interesting Financial Series

IN the following issue, *Automotive Industries* will begin the presentation of the results of an exhaustive analysis of the financial reports for 1927 of many of the leading car, truck, parts and accessory manufacturing concerns. Important facts relative to the financial structure and operating conditions of these companies will be brought out, including proportion of assets in various classifications; profits on sales and invested capital; turnover of inventories and receivables and other ratios fundamental in corporate management.

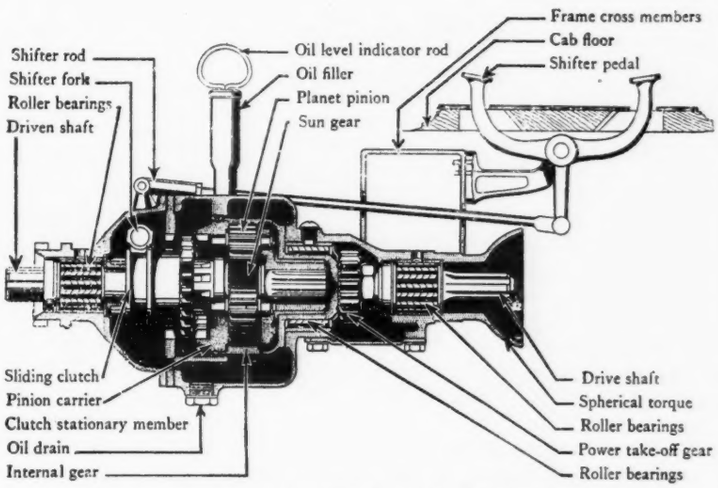
Fur purposes of comparison, the same analysis has been made of a selected group of the leading manufacturing companies in other industries.

Ford Truck *Auxiliary* Transmission *is of* Planetary Type

Has three planet pinions which turn around a sun gear and mesh with large internal gear. Operates by pedal.

IN connection with descriptions of the new Ford truck model printed some months ago, mention was made of an auxiliary two-speed transmission to be supplied at extra cost. Details of this transmission are now available.

The dual transmission is of the planetary constant-mesh type and provides a reduction of 1.47 to 1. It has three planet pinions which turn around a sun gear and mesh with the large internal gear, being similar in this respect to the Model T steering gear. This auxiliary transmission is controlled by means of a separate internal-and-external gear clutch provided for this purpose ahead of the planetary gearing. In direct drive, of course, there is no relative motion of the working gears, since the sliding member of the clutch mentioned locks the planetary system, which latter is mounted on roller bearings as shown by the accompanying illustration.

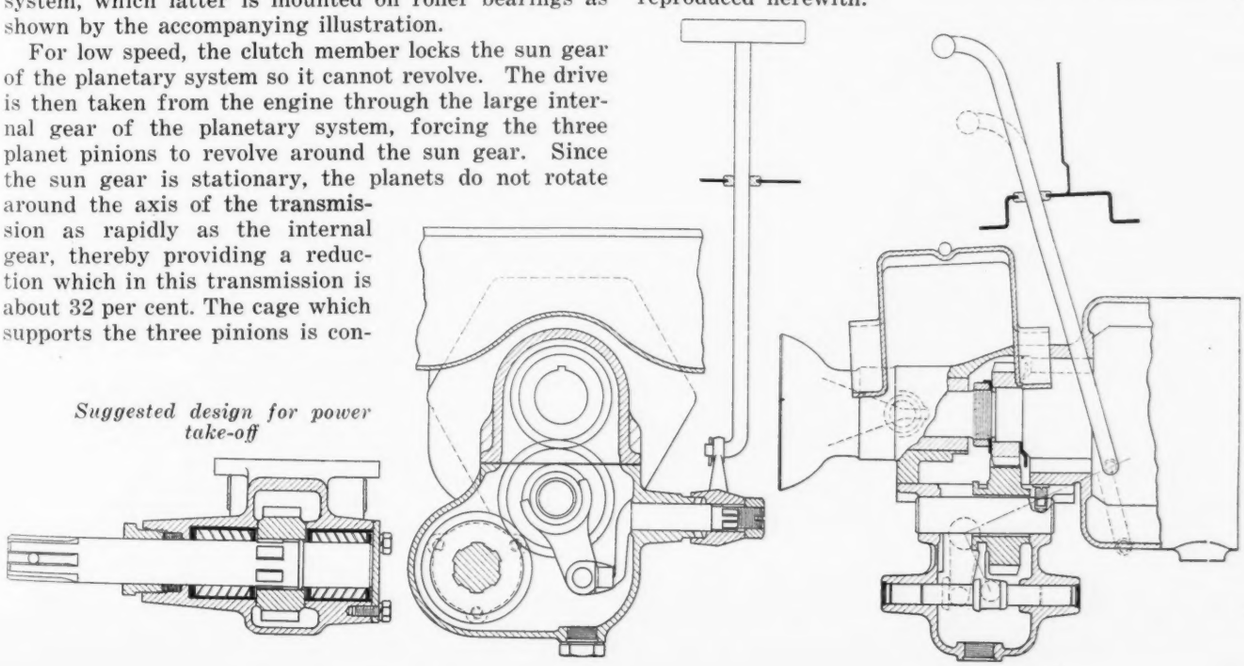


Auxiliary transmission for Ford truck (longitudinal section)

For low speed, the clutch member locks the sun gear of the planetary system so it cannot revolve. The drive is then taken from the engine through the large internal gear of the planetary system, forcing the three planet pinions to revolve around the sun gear. Since the sun gear is stationary, the planets do not rotate around the axis of the transmission as rapidly as the internal gear, thereby providing a reduction which in this transmission is about 32 per cent. The cage which supports the three pinions is connected to the driven shaft, which transmits the torque to the rear axle.

The auxiliary transmission is foot-controlled. There are two pedals projecting through the cab floor. By depressing one pedal, the auxiliary transmission is locked and therefore disengaged, while by depressing the other pedal, it is engaged. It is claimed that the pulling capacity of the truck is increased 47 per cent by the use of this transmission. In direct drive, speed and pull are the same as with the standard truck without the auxiliary transmission.

This transmission is provided for the new Ford truck as optional equipment at extra cost. It is also provided with a power take-off gear for use with dump bodies, etc. The power take-off itself is not supplied by the Ford Motor Co., which furnishes the suggested design reproduced herewith.



Suggested design for power take-off

European *Brake* Regulations Giving Car Manufacturers *Trouble*

Several American makes recently refused by French authorities for not having two entirely independent braking systems. Requirements are impracticable in some respects.

By W. F. Bradley

A MORE strict application of national and international regulations governing automobile brakes is causing trouble among European manufacturers, and in some cases is preventing American cars being accepted by French and other authorities. During the past few weeks several makes of American cars have been refused by the French technical authorities or have had to be modified to meet the French regulations.

The French Code de la Route states that "every automobile must be provided with two braking systems having independent control and transmission; these brakes must be sufficiently powerful to hold the car on the steepest gradients."

The French Code de la Route has been accepted as a model by several other nations. In addition to this, an international convention on automobile traffic, held in Paris in April, 1926, decided that "every automobile to be admitted to international circulation on the common highway must be equipped with either two systems of brakes, independent one from the other, or one system operated by two means of control, of which one control must act even if the other becomes defective. In either case the system must be sufficiently effective and of rapid action."

Eight nations, viz.: France, Spain, Great Britain, Belgium, Norway, Egypt and Morocco, agreed to this regulation, but it has not yet gone into effect, for 20 signatures are necessary to make it obligatory.

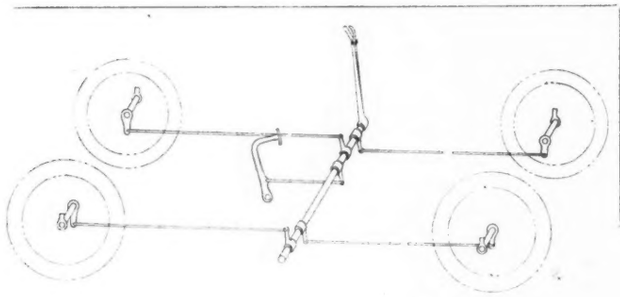
By making it impossible for any part of the mechanism to be common to the two systems, real difficulties are raised. Lawyers had more to do with the drawing up of this regulation than had engineers, and they were incapable of realizing that some parts might be common without any disadvantages accruing. The French Service des Mines, a Government department which passes on all new models of cars before they go into service, realized the defects of the law and has used reasonable discretion in its application. As a consequence, about 80 per cent of the cars now built in France do not conform to the text of the French law, although they are considered by the French Service des Mines to give all the guarantees that are necessary for safety.

A couple of years ago the Polish authorities held up automobile parties wishing to enter that country, on the ground that their automobiles, although passed and approved by the technical department of the French Government, did not have two entirely independent braking systems. This action obliged the French Service des Mines to be more strict in the application of the law, and although this is not even yet enforced to the letter, several new models have been turned down as unsatisfactory, and have had to be modified.

When the new Citroen was produced last year, it was refused because it did not have two entirely independent braking systems. More recently the Ford has been refused; another American car has been found to require modification, and several French makes have been turned back on their makers for changes in the braking system. The only types which appear to fully comply with the regulations are as follows:

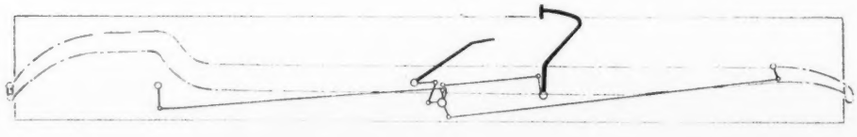
1. Transmission brake with hand or foot control; four-wheel brakes with hand or foot control, the two not being connected in any way.
2. Four-wheel brakes with an additional pair of shoes in the rear wheel drums, these latter having separate rods and levers.
3. Four-wheel brakes operated by pedal or by hand with, in addition, hand control through the same rods, provided the levers are on different shafts.

Transmission brakes have practically gone out of

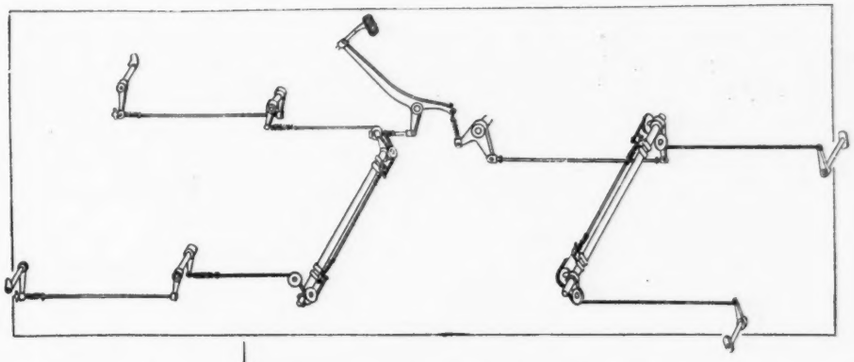


Right—Brake layout on French Talbot has been accepted although not strictly in accordance with the regulations, for a single shaft carries the operating levers for both the front and rear brakes

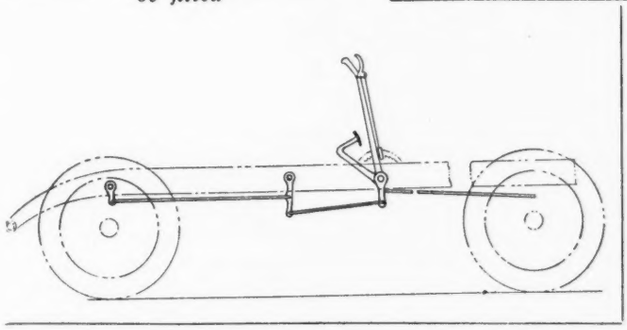
Left—This arrangement is very common on French cars but is not in accordance with regulations. In some cases it has been accepted, if the shaft is very heavy and well supported. In other cases it has been refused and two shafts had to be fitted



Right—This layout on the 20 hp. Minerva is in accordance with European regulations



Below—This arrangement of pedal and lever on one shaft was not permitted either in France or Germany. Separate shafts had to be fitted



existence since four-wheel brake systems were developed, and probably not more than 10 per cent of European cars are now equipped with them. Because of cost and increased unsprung weight, few cars have two sets of shoes side by side in the rear wheel drums. Even when this system is adopted it would not comply with the law unless the levers for the front and the rear sets were mounted on separate cross shafts.

Large numbers of European cars have all the brake levers on one cross shaft, this shaft being carried in bearings either on the side rails or on a transverse frame member. Connection is made from the pedal to a lever on this shaft and also from the hand lever, usually mounted on the transmission to another lever on the same shaft. In order that the hand lever may not move when the pedal is depressed (or vice versa) connection is made by slotted yokes.

This system is very common; it is satisfactory in operation and it is reasonably cheap to produce. It does not comply with the letter of the law, but it seems to have been passed in many cases, on the grounds that the shaft was so strong and so well supported that it could not possibly break. In other cases a central bearing has been required on this shaft, with the levers for one set of brakes on one side of the bearing and for the other set on the opposite side. In certain cases a concentric shaft has been admitted with one set of levers on the ends of the inner shaft and the other set on the outer shaft. Another arrangement which has been admitted, although not complying with the letter of the law, is a heavy shaft mounted in the clutch housing and carrying the levers for both the front and the rear wheel sets.

The fact that the French and other European authorities have found it necessary to use discretion in the application of the law indicates that the latter was drawn up by persons of little engineering experience. A cross shaft of ample dimensions and well supported in bearings on the side rails or one of the cross frame members gives such a measure of security that it can safely be used for receiving the levers for both sets of brakes. As usually laid out it is practically impossible for such a shaft to break, and the only practical objection that can be raised against it is that if it seized in its bearings neither set of brakes would be available.

Books for the Business Bookshelf

Accounting Made Clear

How to Understand Accounting. Howard C. Greer. Ronald Press Co., New York. 255 pp. $3.00.

THIS is a book for the executive who wants a better understanding of balance sheets, income reports and other statements from his accounting department. It will also be useful to the banker and investor who does not have a technical training in accounting theory, practice and procedure. It is more than an elementary introduction, and it reveals some really critical thought given to long standing accounting habits.

Spur Gears

Spur Gears, Design, Operation and Production. Earle Buckingham, Associate Professor of Engineering Standards and Measurement, Massachusetts Institute of Technology. McGraw-Hill Book Co., New York.

THE purpose of this book, in the author's words, is to bring out as clearly and simply as possible the fundamental characteristics of spur gears, in the hope that more effective use may be made of the facilities now available for producing them. The subject is naturally a rather involved one and requires a good deal of mathematics, but the mathematical treatment is held as simple as possible and the application of most of the formula derived is illustrated by practical examples. The book is divided into three sections, dealing with the design of gears, their operation and their manufacture, respectively.

Slide Rule Instructions

The Slide Rule. C. N. Pickworth. D. Van Nostrand Co., New York. 134 pp. $1.50.

THIS is a practical manual of slide rule operations valuable both to beginners who may be interested only in simple calculations and to engineers who find the slide rule useful in solving complex equations. The book is well illustrated with practical examples of methods to be used in solving mathematical problems of all sorts.

Fast 1½-2 Ton *Models* Numerous *at* German Truck Show

Many new jobs in this class unveiled at exhibit held in connection with Leipzig Fair. All types of commercial vehicles on display. Ford and G.M.C. among exhibitors

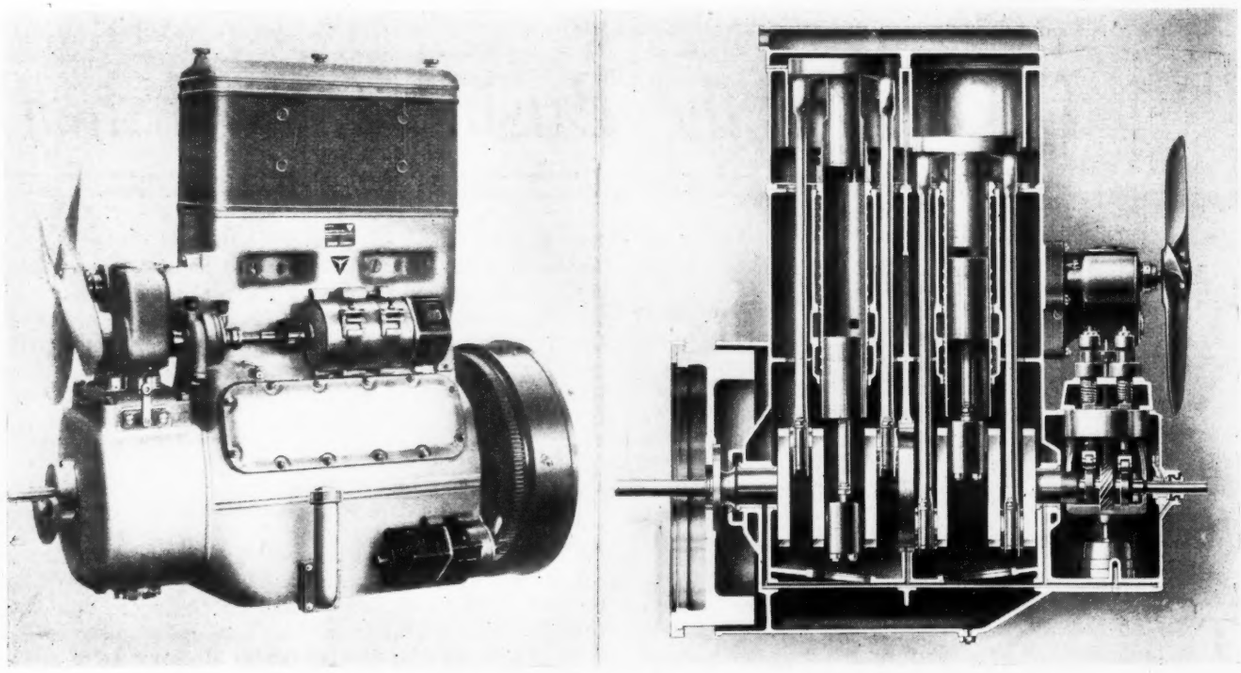
By Edwin P. A. Heinze

THIS year's international vehicle show in Germany was held as part of the Leipzig Spring Fair. The importance of the Leipzig Fair as a means of international commercial car propaganda seems to be underrated by the non-German industries, for only G.M.C., Ford, Renault and Citroen were represented with their already well-known models. (Steyr is regarded as being a German make.) As a matter of fact, the Leipzig Fair has a strong influence on all the markets in Eastern Europe.

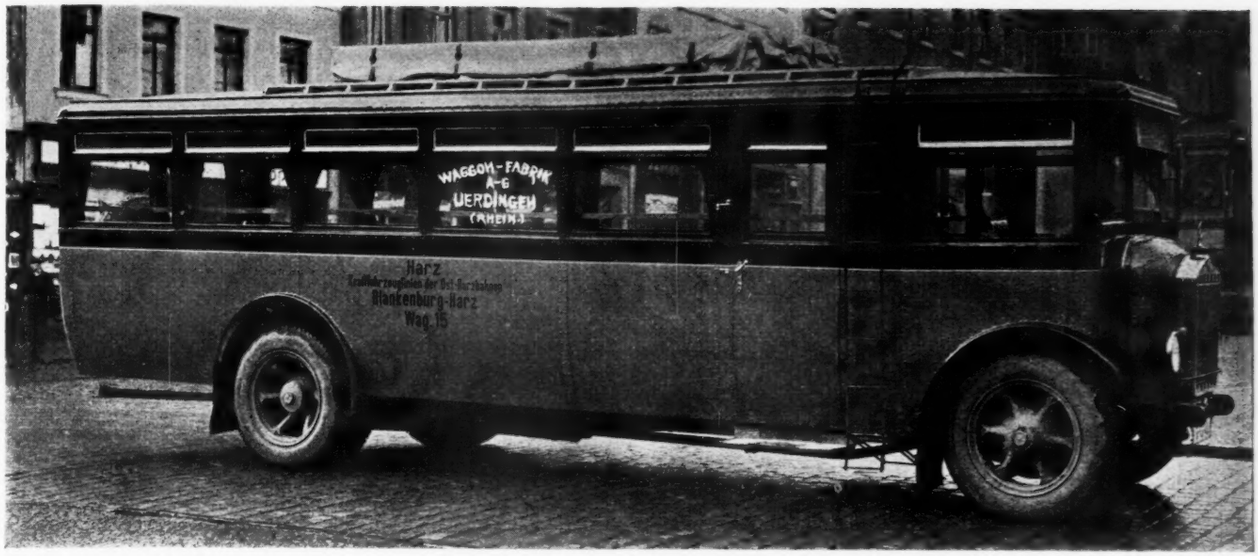
Barring three or four makers whose products had not undergone any change since the Cologne show of May last year, practically every factory of any importance in Germany turned out and quite a number of interesting new designs were brought forward. There were 37 exhibitors of commercial vehicles, including the non-German firms, and they showed 59 types of trucks, 26 types of buses, 17 types of special vehicles, such as trucks with tipping devices, fire brigade engines and municipal cars of all descriptions; 13 types of small three-wheel carriers, and six types of tractors. Of the truck models, 19 belonged to the 1½ ton class, eight had a capacity of 2½ tons, 15 of 3½ tons and 17 of more than that, and in the bus line 17 models were of the heavy type, seven of the medium and two of the light.

German makers have fully realized the value of the light, speedy truck with capacities up to about 2 tons, and this show brought a remarkable increase of models in this field. Among others, there were at the show the following mostly new or at least improved models: Opel (2-ton), Brennabor (1½-ton), NAG-Presto (1½-ton and with third, trailing axle, 2½-ton), Hansa-Lloyd (2½-ton), Adler (1-ton), Ley (2-ton) and Steyr (2½-ton). With the exception of the NAG-Presto and the Hansa-Lloyd these all have six-cylinder engines.

There is a distinct tendency in Germany toward the use of worm gears for final drives in all classes of commercial vehicles. Nacke, one of the pioneer commercial vehicle manufacturers, has been an adherent of this drive since many years before the war, but it was only in quite recent years that other makers began to adopt it, and this year it is to be found on Magirus, Krupp, Opel and Steyr trucks, and a new miniature car, the Ansbach.



Side view and section of Junkers two-cylinder, two-stroke Diesel-type truck engine



Bus with all-steel body by the Uerdingen Car Works

German engineers cling to the use of fabric-type universal joints even in the heaviest of utility cars. Rubber mountings are being extensively employed instead of spring shackles, and engine suspension on rubber pads is also coming into use. A new 3½ ton Nacke chassis has a rather novel engine mounting. In front the engine is bolted centrally to a cross-member of the frame, while at the back it is suspended on both sides by rubber fabric shackles. This chassis, by the way, is provided with four-wheel brakes, the front brakes being of the Poulet type. The separate gearbox is fitted with several auxiliary drives, for a dumping device, an air pump and the speedometer.

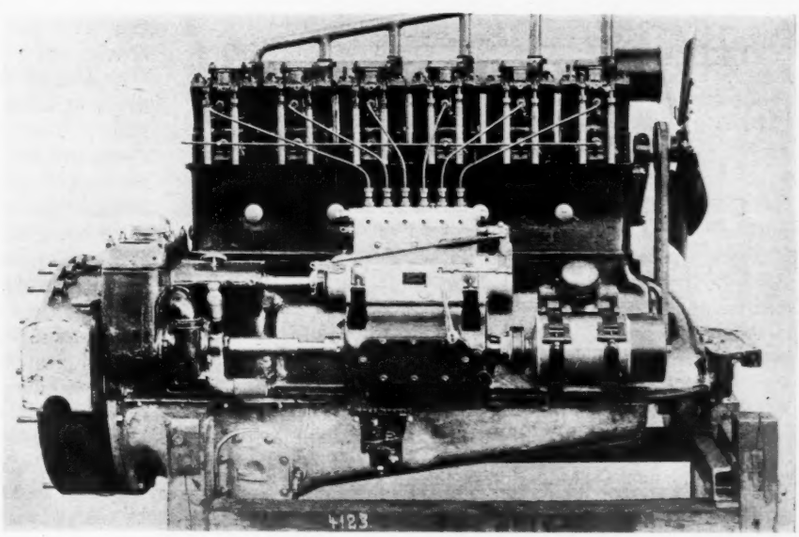
Bosch-Dewandre Brakes

A large number of the vehicles exhibited are equipped with Bosch-Dewandre brakes, but Knorr compressed air brakes are also met with frequently, especially on trucks working with trailers. Four-wheel brakes are becoming a standard feature of German trucks and auxiliary transmissions have been adopted in several cases.

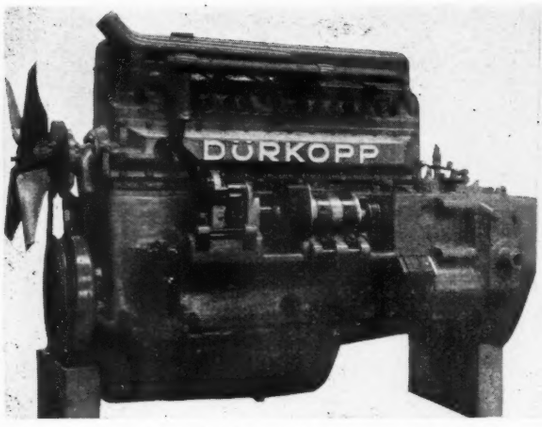
The new method of taxation in Germany, which takes account of the tire equipment, is having a salutary effect. Solid tires are being discarded and were to be seen on only three per cent of the vehicles shown, while 19 per cent of them had cushion tires and the remaining 78 per cent pneumatics.

Many of the exhibitors had been able to finish their exhibition models only at the last minute, and it was not possible to get much information regarding details of design. This, for instance, applied to a highly interesting new design by Mannesmann-Mulag. The chassis on exhibition is said to have been built for the German army. At first glance it is strongly reminiscent of the British Scammell, From this it differs, however, in that the wheels move wholly independently of every other. Each wheel is mounted on a hollow arm of deep section which is pivoted on the rear axle. The pivot ends of each pair of arms embrace a small differential gear on the end of the axle, and this gear transmits the driving torque to the wheels by a train of spur wheels. There are thus one main and two subsidiary differentials, which latter, however, only have to compensate the differences in motion, when one passes over a large obstacle while the other remains on level ground.

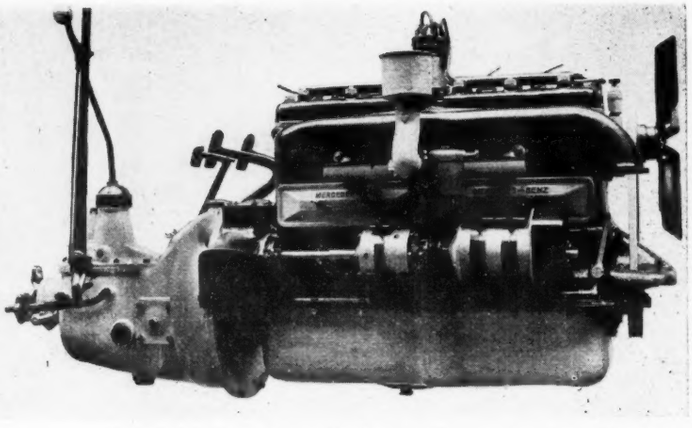
This same chassis has an improved front axle of the type described in the June 11, 1927, issue of *Automotive Industries*. The new axle is tubular in design and is combined with a transverse spring. The idea underlying this arrangement is, evidently, to prevent swaying on very uneven roads, and the design would appear to be suitable for bus work as well as for the transportation of delicate goods, such as cigarettes, which greatly deteriorate in ordinary road transport. Mannesmann-Mulag also showed various other truck and bus chassis, one with a six-cylinder, 402-cu. in. engine and another with a 100 hp. six-cylinder Maybach engine.



Mercedes-Benz 70 hp. Diesel truck engine with upper half of cover over valve rods removed

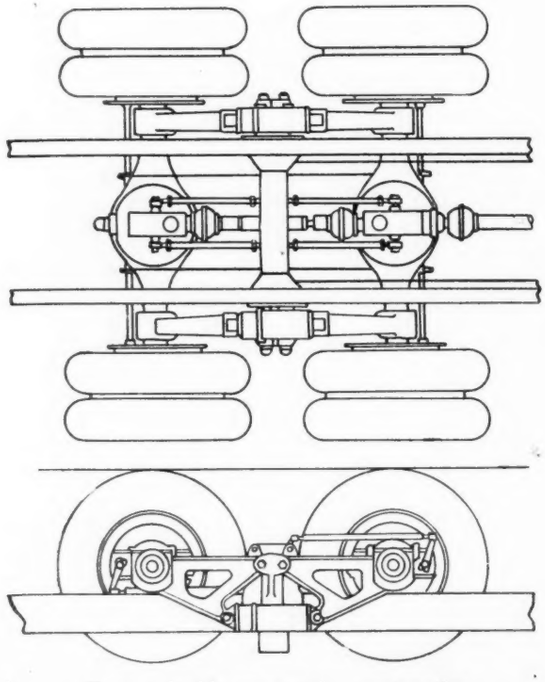


Duerkopp six-cylinder engine for 5-ton trucks, magneto side



Mercedes-Benz six-cylinder, 55 hp. engine for 2½-ton speed trucks

Krupp also showed some chassis that had only just been completed. Among these was an 8-ton truck with three axles, of which only the central one is driven. This chassis, which has a Krupp six-cylinder engine with overhead valves, developing 75 hp., weighs only 9480 lb. There was also a six-wheel 4-ton chassis with both rear axles driven by worm gears, the propeller shaft being extended to the third axle by a short shaft with fabric joints. The axles are held at each side of the frame by triangular forgings, which are pivoted to a tubular cross-member projecting from the frame on both sides. A coiled spring in a cylinder with a plunger is interposed between the apices of the triangular links. This will be more readily understood by reference to the accompanying sketch. Krupp also showed a neat bus with 27 seats. The engines have not been changed, but in most of the models having leaf springs, these are now supported by rubber blocks instead of shackles. Lockheed hydraulic brakes are used on all Krupp vehicles. One of the chassis is provided with an auxiliary reduction gear that can be brought into operation by means of a small lever at the side of the usual gear lever.



Krupp double rear axle construction

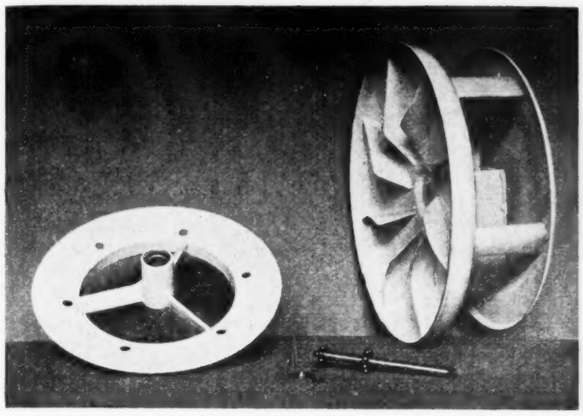
Third axles as trailing axles have come into favor in Germany rather suddenly. Among the firms that have adopted them is the NAG, which is marketing several models and is offering to fit them to trucks of its make already in use in order to increase their carrying capacity. But the NAG is also supplying six-wheel chassis with both rear axles driven. All NAG products at the show had six-cylinder engines with twin-cast cylinders. A feature of these is the provision of two carburetors, of which ordinarily only one is operating, the second coming into use only when the accelerator pedal is fully pressed down. Much interest was shown at the NAG stand in a new planetary gearbox in which the different speeds are controlled by magnetic clutches. (Apparently the Cotal, described in *Automotive Industries* of June 17, 1926—Editor.)

Daimler-Benz has produced an entirely new 2½-ton chassis, which is also available in a low-frame type for bus work. This chassis, the same as the latest model of the 1½ tonner, is equipped with a six-cylinder engine with governor and four-speed gear box, the latter blocked to the engine. An exhibition bus chassis with a 70 hp. six-cylinder engine and open sections of the transmission served to show quite clearly the spur-wheel drive to the rear wheels which is used in this model. These makers now have a range of commercial vehicles covering practically every requirement, embracing the following capacities: ¾, 1½, 2½, 3½, 5 and 10 tons, the latter a six-wheeled design, besides a number of special fire brigade and municipal vehicles.

Buessing has temporarily dropped the gas-electric drive exhibited last year, but is continuing its development. The only exponent of this form of drive in Germany now is the Faun Co., which has not changed its model. The Durkopp works have produced a new 5-ton truck of neat design. It has a two-block engine with six cylinders of 4.33 in. bore and 5.51 in. stroke.

The camshaft drive is at the flywheel end, to obtain silent operation. The radiator is of the interchangeable sections type and has a flexible mounting on the chassis. The carburetor is provided with an air cleaner and a starting choke. The inlet manifold is heated by means of an exhaust jacket. Fuel is vacuum-fed, and magneto ignition is employed. The equipment includes an electric generator and starter, as well as a hand starting crank with a reduction gear. All moving parts of the engine are very accessible. It only takes a minute to take out a valve, and five minutes to remove a piston and connecting rod.

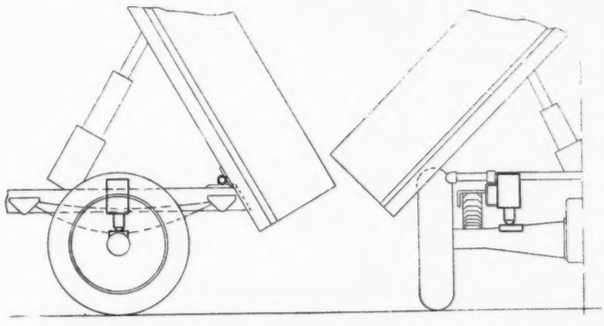
The clutch is of the dry multiple disk type and is blocked to the crankcase together with the four-speed



Flettner ventilator for bus bodies

gear box, which is controlled by a central lever. The chassis can also be had with the driver's seat at the left side of the engine. Three-point engine support with rubber mountings is employed. The tubular propeller shaft has rubber fabric joints and the final drive is by straight bevels on a differential gear-box, which is the center piece of a three part axle.

Durkopp also has adopted a spur gear drive in the wheel hubs, which, it appears, is finding much favor with German designers at present. Four-wheel mechanical brakes are fitted, together with an emergency brake on the transmission. This chassis may be had



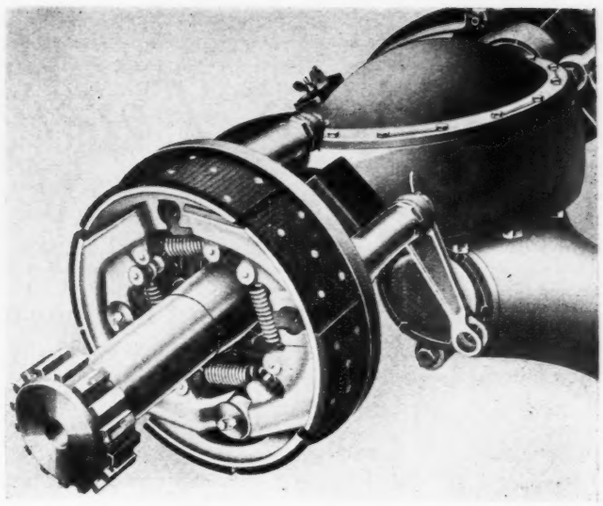
Gaubschat three-way dumping mechanism with automatic support

with a low frame to take a bus body, in which case the fitting of a Bosch-Dewandre brake is optional.

Magirus has altered its old models only slightly, the principal change being the adoption of worm gear final drive in the 2½ tonner. The Vomag Co., on the other hand, which previously used a Maybach engine for its largest type of vehicle, has now developed a six-cylinder engine in three blocks with four babbitted main bearings, valves in head (pushrod-operated) and magneto ignition. This engine has a piston displacement of 671 cu. in. and is the largest truck and bus engine produced in Germany at the present time. It develops 130 hp. At the show it was displayed in a large bus with steel body, while a 5-ton truck was fitted with a similar but slightly smaller L-head engine developing 100 hp.

Stock engine makers in Germany evidently are not making much commercial progress, for the large truck firms prefer to use their own engines and of the lesser makers many have given up truck manufacture to concentrate on their other lines.

Much interest was aroused by the display of Junkers Diesel engines. The Junkers company of Dessau has now so far developed its well-known type of machine



Vomag bus rear axle

that it can supply them for automotive requirements. Two types suitable for automotive work were shown on the exhibition stand, with two and three cylinders, respectively.

The M.A.N. company showed a number of trucks and bus chassis all equipped with its well-known Diesel engines. Thus the Diesel automotive engine was represented at the show by four makers, namely, Daimler-Benz, Maybach, Junkers and M.A.N.

All German makers are paying much attention to the bus field. Modern truck chassis with their smooth-running six-cylinder engines, starters, electric lighting equipment, etc., are so refined that they can be readily adopted for buses by merely reducing the height of the frames.

New Method of Ventilation

Recently a new method of ventilation for bus chassis has gained ground in Germany. It consists of a wind-operated fan that was invented by Flettner. The system is now in use on a large number of buses and street cars, especially in Berlin, and was, of course, also presented at the show. These ventilators are easily installed. They consist of two round metal disks, arranged one above the other, with vertical vanes (similar to those in exhaust fans) between them. The lower disk is pressed out to from a number of vanes. This simple drumlike structure is mounted on a horizontal shaft with ball bearings, and is supported on an annular base that can be fastened over a hole in the roof by means of screws.

There does not appear to have been much mechanical development in the tractor field in Germany. Fordson undoubtedly has conquered a large share of the market, but the German factories are also well supplied with orders. The Maffei company of Munich was at Leipzig with a tractor built under license from Chenard & Walcker, and Komnick showed its two popular models with gasoline engines. Dumping mechanisms for trucks are being produced in Germany in large variety. With one exception all those shown at Leipzig were of the hydraulic type and operated either by the car engine, a separate small gasoline engine or electric motor, or by hand. Practically all devices now admit of dumping in three directions, whereas in former years a number were shown that would dump in one direction only, or at most in two.

American *Foreign Assembly* Plants Create Wealth Abroad

Employment of labor and purchase of material by American owned plants abroad benefit foreign nations and increase future markets.

PROBABLY no automotive man has had as wide an opportunity for studying first hand the fundamental as well as the practical problems of export business in the last five years as has J. D. Mooney, president, General Motors Export Co.

In a recent talk, a digest of which is presented here, Mr. Mooney outlined concisely some basic principles which have a very real significance to automotive executives at this time when American manufacturing as well as selling activity in foreign countries is growing apace.

THE best way to help European nations pay the debts owed to the United States is to aid those nations in the creation of wealth within their own boundaries, J. D. Mooney, president, General Motors Export Co., told the Export Managers Club in New York on March 20. Fundamentally, Mr. Mooney pointed out, these debts are incurred and discharged in terms of human labor, that is goods or services, but foreign countries need our goods today and will not wait until, with their own goods, they have discharged their debts to us.

As an example of how the automotive industry actively is aiding the creation of wealth within various foreign countries, Mr. Mooney cites the plants which the General Motors Corp. has today in 21 foreign cities. "These plants," he said, "employ local labor, they use a great deal of locally purchased material and their effect on local economic conditions is certainly considerable.

"Far more important than that, however," Mr. Mooney urged, "is the fact that every motor car or truck we sell abroad is creating wealth in the territory in which it is sold—wealth with which to pay debts and purchase more American goods."

This same sort of process helped materially to build up America in past years, Mr. Mooney said, pointing out that "When British capital, some sixty years ago, built our railroads through the Middle West, the British bankers received a return on their investment, of course, but for every dollar they took out of the country, hundreds of dollars worth of new economic wealth was created along the line of the rails that they laid. We are doing this same thing in foreign lands with the automobile," he said, adding that "far from disturbing the economic trade balance, we feel that we are definitely aiding in the ultimate redistribution of values."

Improvement of the physical machinery by which goods are distributed throughout the world, analysis of the urge that is in the American business man to seek adventure and accomplishment and the increasing wants of mankind were other points touched on by Mr. Mooney in his discussion. He said in part:

"Improvements in means of communication and transportation have brought nations closer together, until today there is comparatively little difference between the mechanics of domestic business and the mechanics of the export business.

"This is an age in which time is more valuable than it used to be. Less of it, at least, is wasted than heretofore. Great corporations are able to operate with branches all over the world because of the improvements that have been made in means of communication and transportation. This is an airplane age. This is a wireless age. This is an age to challenge one's imagination, and the man who is living in that interesting past when international trade and full rigged sailing vessels were synonymous had better begin to adjust himself to the new tempo.

"In the transportation of ideas by wireless, by cable, by telegraph, we move rapidly. In the transportation of materials by land and by water and by air, we are moving rapidly too and much time has been saved in recent years in moving materials. Only a few years ago it took us eight or nine days to bring our cars from factories in the Detroit area to seaboard; our current average is four and one-eighth days.

The Coincidence of Opportunity

"This situation is one that holds elements of great promise. Economic structures—that is, industrial and commercial structures—can be built up throughout the world very much more rapidly than ever before, and they can be knit together into a coherent, organized whole with certainty and precision. We possess the tools and machinery for moving goods, and we find them available to us, in their perfected state, at the very time when the necessity for moving goods is itself a matter of deep economic significance. This coincidence of opportunity is something, obviously, that challenges the imagination.

"One of the things which always strikes me when I return to the United States from Europe or from some other part of the world is the restlessness that I see all about me. Of course, we must remember that it was

restlessness which really resulted in the establishment of the American colonies. And hardly had the colonies been established when the pioneer spirit manifested itself again and settlers started West to find new frontiers. The movement westward continued until the coastline stopped the migration. Today this restless pioneer spirit is just as alive as ever. The business man is still looking for adventure. And he is finding it in international trade. The pioneer is finding an outlet for his energies, his imagination, in foreign lands. And his work knows no national boundaries.

"The flow of American capital overseas has naturally acted as a magnet to American personnel. We lend freely and we invest freely, but we reserve a certain control over the funds we invest and that means the investment also of personnel. As our financial and commercial activity abroad increases we can reasonably expect to see a still greater flow of personnel to foreign lands.

"Just what does this flow of capital and personnel overseas mean? It means that we are building what is in a sense a great American commercial empire. There is no thought of appropriation of territory. That is contrary to the spirit of the American people. We respect the sacredness of the other man's land and we respect his rights.

Not an Imperialistic Nation

"The United States is in truth anything but an imperialistic nation. While it cannot be denied that we are building a great empire, it is one of economic alliances and personal associations, one represented by capital and personnel. Instead of appropriation of territory there is a penetration of ideas, an infiltration of practices, the building of an industrial and commercial empire. The world has seen nothing of its like before.

"Where we have entered the lives of other countries we have brought an influence for good and an appreciation of economic opportunities. Our methods and our practices have been quite different from those of the colonizers of any other nation. Our major interest has not been to exploit; it has been to develop. Sanitation, educational facilities, good roads, advancement in medicine and hygiene, the establishment of hospitals and of institutions for the needy—these are typical of what follows American business and the American business man. Countries have thrived under American cooperation. And such cooperation has been reasonable, and just.

"When we look into the future we have reason to believe that the flow of capital and personnel to foreign lands will continue and the building of this great American industrial and commercial empire overseas will continue. Our influence in other lands is increasing. American business today knows no boundaries. The markets of the world are the markets of American business. And we must be prepared to defend this great industrial empire. We as a nation are not going to march ahead to new business conquests without having our progress challenged. There are other great export nations, nations which have been engaged in overseas business much longer than we have, and we must accept the challenge of their competition. It is to American business men who are driven by urge for adventure and accomplishment that we must look for the consolidation overseas of the opportunities made possible by increased international trade.

"One more factor I should like to mention as having an important bearing on the forward movement that is apparent throughout the world today.

"By an accumulation of experience, by trying a thing once and finding it good, the wants of mankind have steadily increased. In recent years they have multiplied as never before. It is human nature not to give up a comfort or a luxury once acquired, and it is also human nature to want for yourself what the other fellow is enjoying.

"The desire to obtain new things, and, having them, to retain them, is a world-wide desire, and as the standard of living throughout the world improves—and a standard of living after all is simply a measure of the relative ability of people to produce and exchange and consume each other's products—so will the tide of international trade be driven up to the levels made necessary in meeting the world's increased desires. The tide cannot go back, for human nature will not abate its demand for the things it wants.

"Economic forces must be allowed free play. Natural economic laws must be respected, and no impediments should be placed in the way of their working out freely. That nation prospers best which takes advantage of these laws rather than resists them. The four economic factors I have mentioned have been working in coincidence to bring about a new era in international trade. We entered upon this era several years ago, as a matter of fact, and our task today is to steer our course in accordance with the tide that has set in and to capitalize the existing conditions to the benefit of the American trade.

"In the natural course of events, the export man must be counted upon to play an outstanding part in this unprecedented forward movement in international trade which we see on every hand—he must take his proper place, by intelligent leadership and aggressive activity, in this new era that is upon us—an era in international trade of a scope and potentiality such as the world has never known before."

Giant Monoplane Tested

THE Beardmore "Inflexible," the largest all-metal monoplane in the world, and a bold experiment in the construction of giant aircraft, recently made its first flight in England with complete success. Although it can hold at least 20 passengers, only the pilot and one mechanic, each wearing parachutes, were allowed on the first flight.

With its wing span of 150 ft., supporting in the air a weight of over 15 tons, two standard Royal Air Force fighters could comfortably nestle under each wing. Its landing wheels alone stand 7 ft. 6 in. high. Even the tail fin and rudder rises practically unsupported more than 12 feet above the fuselage, which, with the tail wheel on the ground, is itself some 6 ft. above the earth. The stout rectangular fuselage in the cabin section is about 12 ft. deep. So big is the "Inflexible" that even the large hangars of the Martlesham Heath can only contain the machine sideways.

The three engines are Rolls-Royce Condors of 650 hp. each, one mounted in the nose and one on each side of the fuselage. Large brake drums are fitted to the built-up disk wheels, an innovation so far as British airplanes are concerned.

In a run of just under a quarter of a mile the plane lifted easily and climbed steadily. None but the most gentle of maneuvers was attempted on the first flight, and for 15 minutes the pilot flew around in wide circles at about 2000 ft., and by using the brakes pulled up easily in 300 yards on landing.

Automobile *Body Faults* Enumerated *by* Proving Grounds Expert

Present methods of construction lead to many squeaks and rattles after year of service, says O. T. Kreusser at first meeting of Detroit S.A.E. Body Division.

WHAT'S wrong with the average automobile body? Members of the newly organized Body Division of the Detroit Section, Society of Automotive Engineers, heard some interesting answers to this question in the course of a paper read by O. T. Kreusser, director of the General Motors Proving Grounds, at a meeting on March 19. The Detroit Body Division is the first division ever organized within a section of the S.A.E. to specialize in a field of particular interest to a group of section members, and this was its first meeting. Nearly 500 were in attendance.

After pointing out that style and comfort were probably the leading factors in the sale of automobiles, Mr. Kreusser enumerated the inconsistencies and drawbacks of the average body, eliminating the style factor by stating that the latter is a question for individual preferment.

In body dimensions, according to Mr. Kreusser, there will be found variations, which translated into percentages are quite startling: Seat width varies from 36 to 45¼ in.; front door post to seat from 7⅜ to 11 in.; seat back to steering wheel from 12½ to 16½ in.; bottom of wheel to seat from 5½ to 9½ in., and headroom from 33¾ to 37⅜ in.

As regards vision, he stated that though horizontal view has been greatly improved of late due to narrower front pillars, etc., vertical vision is worse than ever, in some cars the angle of vision being actually negative for the average driver. Furthermore he stated that there was no agreement on seat angles, that hardware often interfered with body movements, that instrument boards were often effectively hidden by requiring abnormal angles of vision, and that as far as he could determine there seemed to be no relationship between ample body dimensions and long wheelbase.

Noises More Noticeable

Body noises, according to Mr. Kreusser, are becoming relatively more important with the quieting of the chassis. One trouble is that there are no instructions available to the average owner on how to keep noise out of a body. They are often hard to locate, and even if located are probably not fixed, because to do so would involve ripping out of upholstery, etc.

Torsional stiffness of the complete car, and the chassis alone, also seem to bear no relationship, according to Mr. Kreusser's experience, which showed that the section modulus of the frames was no indication of torsional rigidity for the entire car, although good for the frame alone.

Other defects of the "average" automobile body were enumerated as follows:

1. Lack of steering rigidity—front end weave.
2. Heat from the engine. In some cars you roast in summer and freeze in winter, and in some you roast all the time.
3. Poor ventilation. Even worse in higher priced cars, where leaks have been stopped. Danger from engine fumes with all windows closed.
4. Door glasses rattle in midway position although tight when up or down.
5. Rear view mirror ineffectual due to blind rear quarter.
6. No provision to keep sleet off windshields in the winter. This is the greatest hindrance to winter operation at the Proving Grounds.

One Year Later

Mr. Kreusser then took the same "average" car, assuming it had been driven a year, and investigated it for defects. He finds the following:

Squeaks and rattles are still there, only a little worse. Floor mat is ripped and disintegrated. Floor boards are split and shrunk and screws are missing. Windshields and their brackets are loose and the weather strip is "shot." Instrument board is scratched from keys hanging from lock. Cushion button tops have departed. Screws are missing in garnish molding. Structural screws (nickel plated originally) are rusted. Window slides are frayed. Upholstery panels are loose or bulging or missing. Hinges are loose and the screws are missing. Door latches are worn in their case. Foot rests are loose. Windshields are scratched from the wiper. Upholstery is spotted. Some cannot be cleaned with anything. Curtain cords, if still there, are tasseled. Seat retainers are frayed from bouncing out of the cushions and pushing them back in. Garnish rails are worn. Running boards are discolored and dirty. Stove bolts sometimes work through. Finish has peeled off on moldings. Asphaltum enamel on fenders is chalky. Does not stand up as well as body paint. Color on wheels has peeled off. Slats show through roof, also tacks. Top material is worn, and top leaks or looks as if it should. Top molding is loose. Nickel plated parts all over are tarnished and spotted with rust. Hood no longer lines up with cowl or radiator. Cowls cracked, especially on cars with rigid radiator bracing. Door posts are cracked. Metal roof panels crack at corners. Windshield frames are rusted.

On the safety question, Mr. Kreusser stated that the modern five passenger sedan was about the safest piece of structure to be in—provided you hit something, and some one else didn't hit you—amidship.

Just Among Ourselves

The Argument as to What Sells Cars

LONG and hard has raged the argument about whether automobiles are bought chiefly on appearance and general reputation or on intelligent examination of mechanical details by prospective purchasers. The former theory has been gaining weight steadily in the last few years when women are admittedly playing a more important part in car purchasing and when the general performance of all cars has been raised to a reasonably high level. Certainly most actual investigations that have been made tend to prove the average owner fairly ignorant of the makes of the various units comprising his car and the mechanical details appertaining thereto. The average dealer or repair shop man, on the other hand, being interested in cars as a business, usually is pretty well conversant with makes of units on all standard makes.

* * *

Proof That Owners Don't Know Parts

INTERESTING specific confirmation of the theory that owners know little about the makes of specific units in their cars for instance, is embodied in an investigation made in Philadelphia recently when 72 men were asked to tell the make of 15 major units in their cars. The units included were engine, spark plugs, ignition cable, brake lining, fan belt, pistons, piston rings, windshield wiper, bumpers, battery, tires, shock absorbers, front wheel bearings, valves, jack. They were queried as they came to get gas at various local stations and included a good average cross section of different types. On only one item—tires—did half of the group know the make they were using. On seven out of the 15 items, less than 10 of the 72 people knew the make of the unit on their cars. Only two knew the make of fan belt; only four the make of pistons; only three the make of piston rings; only four the make of valves; only four the make of jack; only five the make of bumpers; only eight the makes of windshield wipers or front wheel bearings. Batteries, tires, spark plugs, shock absorbers and engines seemed to be the only items the average owner knew anything about so far as make was concerned. And all of these figures can properly be considered high because no effort was made on the part of the investigators to find out whether or not the owner was mistaken when he made a statement regarding the make of any unit on his car.

* * *

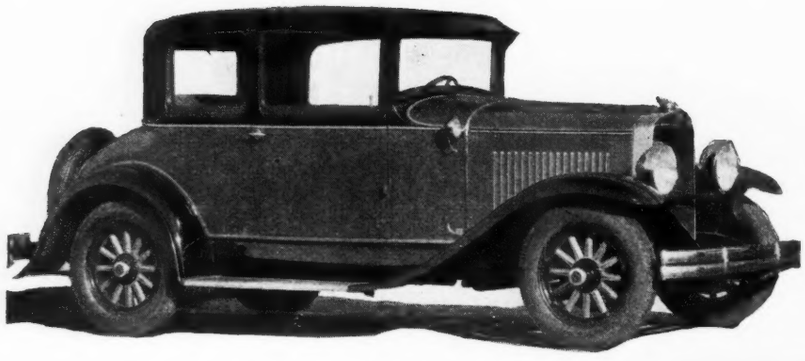
Interested Only in Getting About

SOME interesting personal slants on the attitude of owners toward their cars also came out of the survey. One man said, for example, "I have driven a car for 20 years and have never known what it is all about." Said another: I have no other interest in the car than having it get me there and back; the garage man takes care of it." And another: "About all I know is that it's a Chevrolet and it goes." Still another: "With this bus I just turn it on and it works." Then there were the following: "I don't know the name of anything that hasn't given me trouble"; "When anything goes wrong I'm going to drag it right back to the dealer I got it from"; "What could I know about automobiles?"; "everything on the car is what they put on it"; "I have a service man I know and if anything goes wrong I say to him 'Doc, fix this up for me.'" These were typical comments. Out of the whole 72 only three or four mechanically inclined owners were found who claimed to know what was in their cars and who were interested in the mechanical details. Further investigation along these lines should be a definite aid in developing for car makers more specific bases upon which to build sales appeal in both selling and advertising.

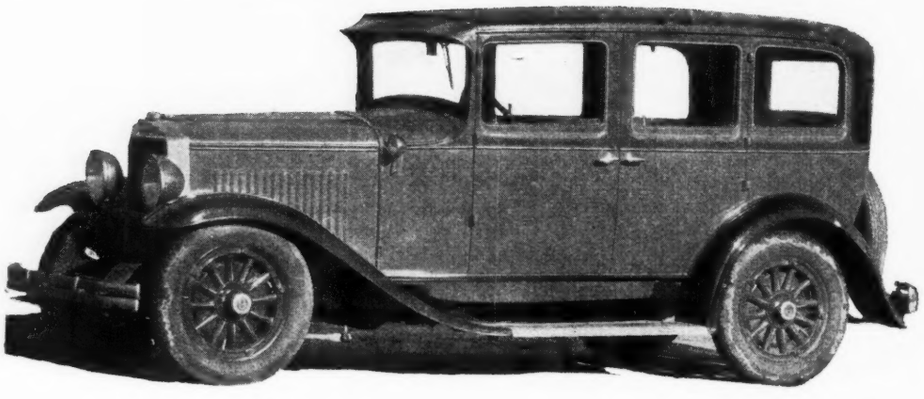
* * *

Automobile Accident Compensation Laws

COMPULSORY insurance will be on the docket in a majority of legislatures which meet this year, just as it was on most of the calendars last year, but present indications are that no new bills on this subject will go through. There is a growing tendency to look with favor on some sort of compensation insurance as opposed to the regular compulsory liability insurance such as has gone into force in Massachusetts. Compensation practice would be worked out somewhat along the lines of workmen's compensation and would, of course, involve a state compensation fund. While it is difficult for all automotive men to agree on just what kind of bills on this topic might best be passed, there is general agreement with the thought that all bills should be scrutinized very carefully because of the marked harm which unfair legislation might bring to the industry. —N.G.S.



Left—Three-quarter front view of new Graham-Paige Model 114 four-passenger coupe. This car is equipped with a four-speed transmission. The coupe lists at $1,275



Right—The Model 114 five-passenger, four-door sedan, which lists at $1,295. The six-cylinder engine has a piston displacement of 207 cu. in. and develops 71 hp. at 3200 r.p.m.

114-In. Wheelbase Model *is* Added *to* Graham-Paige Line

Available in two body styles, four-door sedan and a four-passenger coupe, listing at $1,295 and $1,275. Lowest priced car fitted with four-speed transmission.

At the time of the New York show the Graham-Paige Motors Corp. announced that its 1928 line would consist of five distinct chassis models. Three models were put in production shortly after, the 610, 619 and 629, and these are now followed by the 614, on which production began March 15.

This car, on a 114-in. wheelbase, is particularly interesting in that it is the lowest priced car yet placed on the market with a four-speed internal gear transmission. At the present time two body models are being offered, a five-passenger four-door sedan, listing at $1,295 and a four-passenger coupe, listing at $1,275.

The engine, which has a bore and stroke of 3⅛ by 4½ in., appears to resemble very closely the design of the Model 610 engine described in the Jan. 14 issue of *Automotive Industries*. As a matter of fact, the engine for the 614 was designed before that for the 610, and the latter was based on it. A considerable number of parts are interchangeable between the two engines, including the crankshaft, connecting rods, valve gear, and accessory drives. The 614 engine, however, develops 35 per cent more power, partly because of its ¼ in. larger bore.

Although the piston displacement is only 207 cu. in., the engine is rated at 71 hp. at 3200 r.p.m., and the peak is said to be even higher—79 hp. at 3400 r.p.m. This, of course, means that the torque is well maintained with an increase in speed. The maximum of 149.6 lb.-ft. is reached at 1200 r.p.m. and at 2000 r.p.m. the engine still develops 146.1 lb.-ft. Although the car has a rear axle reduction of only 3.9 to 1, its acceleration is good even in fourth speed, while for extra rapid acceleration the driver will normally use the third speed.

2½ In. Crankshaft

Of the engine features may be mentioned the 2½ in. crankshaft (carried in seven bearings of the interchangeable type), Invar-strut aluminum pistons, four-point rubber mounting, triangular chain front end drive, and crankshaft end-play adjustment by means of shims back of the chain pinion. The fuel system comprises a Schebler 1½ in. air-valve carbureter, supplied by an AC fuel pump from a 14 gal. tank in the rear of the chassis. Full pressure lubrication is used for all parts except the piston pins, which latter depend upon the oil spray.

In unit with the engine are the Graham-Paige-Warner Gear four-speed transmission and Long clutch. The latter is of the single-plate type, with 9¾-in. outside and 5½-in. inside diameter facings, these being of the molded type.

The transmission itself does not differ in principle from that previously described in *Automotive Industries*, being a smaller edition of those used in the larger Graham-Paige models. These transmissions, it will be remembered, differ from the earlier design of internal gear transmission in that a standard shift is used, the "emergency" low gear being latched out.

Metal universal joints are used in conjunction with the tubular propeller shaft, all three being of Universal Products Co. manufacture. Anti-friction bearings are used throughout in the semi-floating rear axle, the pinion being straddle-mounted on ball bearings, while the differential and the axle shafts are carried on taper roller bearings. The axle housing is of pressed steel and of the banjo type.

Front axles have drop-forged I-beam center sections and are reinforced at the ends to withstand the torque due to application of the front wheel brakes. As usual with front wheel brakes, steering spindles are fitted with ball thrust bearings. A Ross cam-and-lever steering gear with constant ratio is used, together with tie rods having ball and socket joints. Springs are semi-elliptic all around, the lengths being 36 in. for the front and 58 in. for the rear.

An unusual feature is found in the Lockheed hydraulic braking system, in that the submerged master cylinder, which keeps the system filled automatically, is combined with external brakes. These have 14 in. drums and are supplemented by a hand-operated parking brake on the propeller shaft. Frames have side channels 5½-in. deep and four cross-members. Tires are 29 x 5.25 in. balloons, mounted on either wood or disk wheels, at the option of the purchaser. Wire wheels are available at slightly increased cost.

Equipment is Complete

Standard equipment includes an air cleaner, an oil filter, a thermostat, a fuel pump, a rear view mirror, an automatic windshield wiper, an engine thermometer and a dash fuel gage. Four mechanical-type shock absorbers are also supplied.

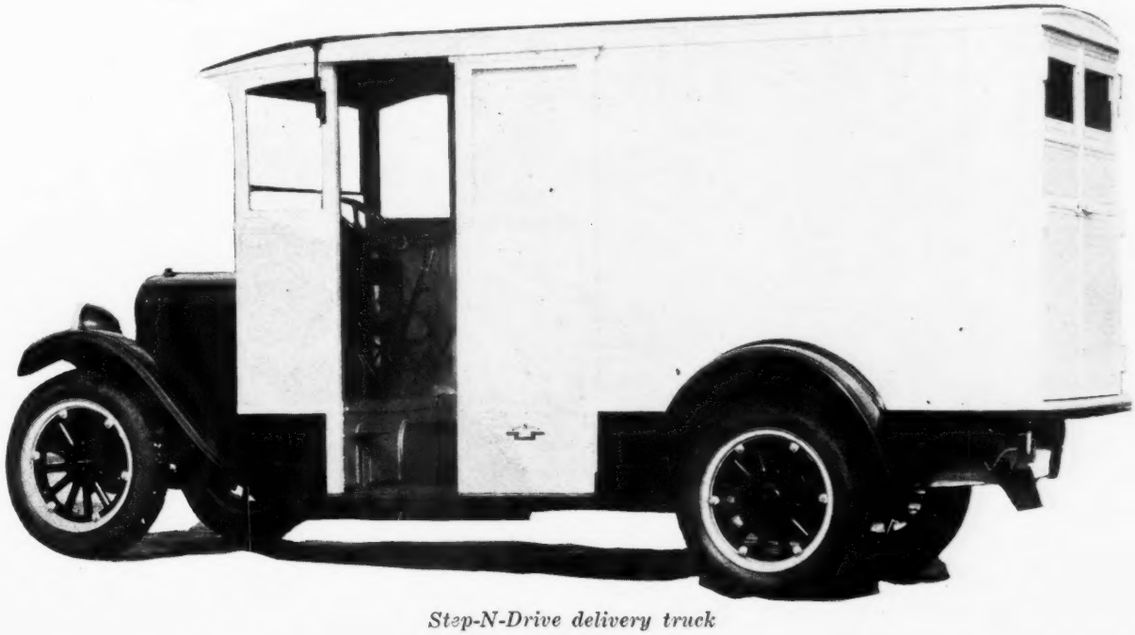
Among body features may be mentioned the steel running boards, an adjustable steering column, adjustable pedals, and a treadle-type accelerator pedal. The bodies closely follow the lines of the larger Graham-Paige models, as may be seen from the accompanying photographs. Military visors, VV windshields and dome lights are standard on both body models, while de luxe equipment, including cowl bands and lights and front and rear bumpers, is available at $40 extra cost. The shipping weight of the sedan is approximately 3000 lb.

Chevrolet to Distribute "Step-N-Drive" Delivery Truck

THE truck illustrated below, known as the "Step-N-Drive," has been designed to facilitate door-to-door retail delivery of such commodities as milk and bread. It is a 1-ton Chevrolet chassis with a special body built by the Buffalo Commercial Body Co. Plans are being made for distribution through regular Chevrolet channels.

The job in general is identical with the Chevrolet 1-ton truck except that the body has been built lower and around the torque tube. By referring to the illustration it will be seen that there is a pedal in the step just inside the door. This pedal when depressed half way disengages the clutch, and when depressed all the way engages the brake pedal and applies the service brake.

The emergency brake lever is longer than usual so that it can be reached easily by a man standing on the step.



Step-N-Drive delivery truck

NEW DEVELOPMENTS—Automotive

Westinghouse Announces New Air Brake Features

A NEW type of air compressor with unloader head, and an automatic governor, have recently been announced by the Westinghouse Air Brake Co., Wilmerding, Pa., and are now being furnished with this company's line of automotive air brake equipment.

With no air in the brake system the compressor unloader head and governor are as shown in Figs. 1 to 3.

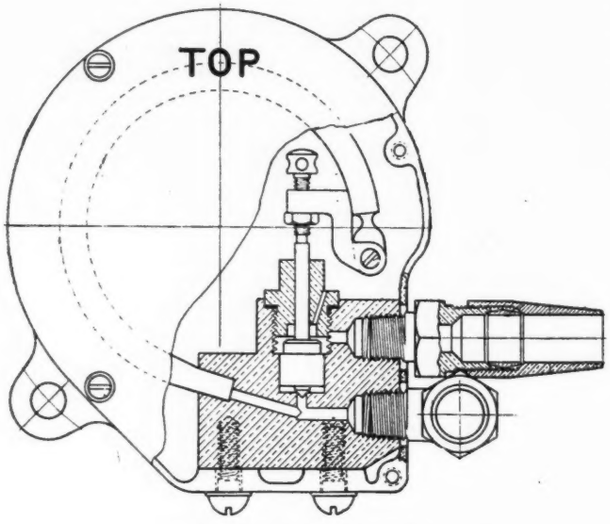


Fig. 1—Sectioned drawing of governor

As compression starts, air entering the governor fills the Bourdon tube and has access to the lower end of the valve. When the pressure reaches a predetermined maximum the tube deflects, relieving tension from the valve stem. The valve then lifts, permitting air under pressure to pass to the chamber beneath the diaphragm of the unloader head. Upward deflection of this diaphragm depresses an actuating lever which in turn unseats the two unloading valves, opening a direct passage between the cylinders. While these unloading valves remain unseated no compression takes place, since the air merely pulsates between the cylinders, and the discharge valves stay closed.

When the reservoir pressure is reduced to the predetermined minimum, the governor tube contracts and exerts a pressure to return the valve to its lower position in which air is exhausted from the unloader head, permitting the unloading valves to be seated by their springs, thereby closing the passage between the two cylinders. Compression of air past the discharge valves is then resumed.

Hydro-Matic Internal Grinder

THE Greenfield Tap & Die Corp., Greenfield, Mass., has developed a new internal grinder, designated as the No. 12 Hydro-Matic, which departs from standard design in having the grinding wheel enter the work from the rear.

The grinding wheel is stationary so that it is exposed at no time and is always out of the operator's way. When the work head is in the loading position the grinding wheel is almost out of sight and completely protected from injury.

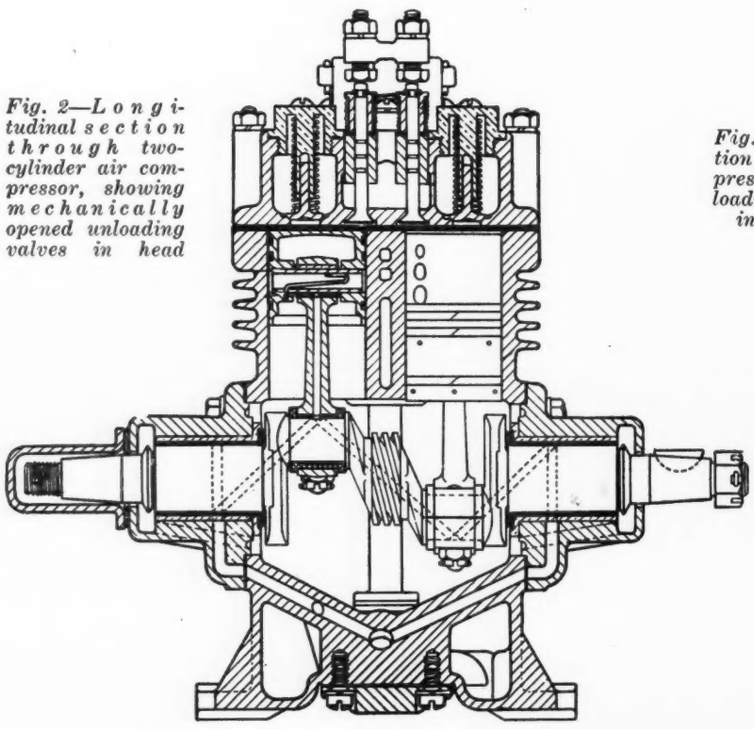


Fig. 2—Longitudinal section through two-cylinder air compressor, showing mechanically opened unloading valves in head

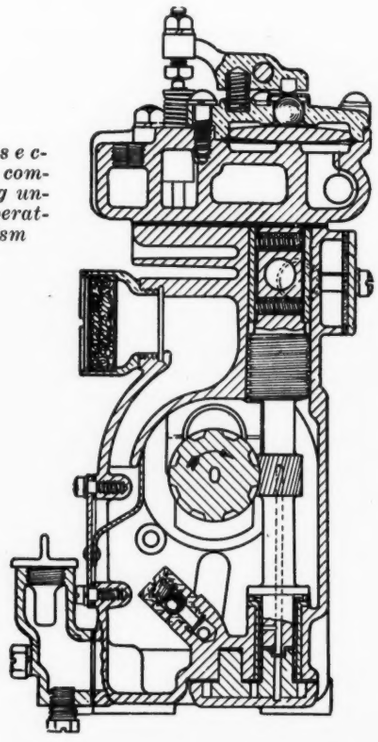


Fig. 3—Cross section of air compressor, showing unloading valve operating mechanism

Parts, Accessories and Production Tools

With this innovation the operator's position is at the front end of the machine, where he can look directly at the work instead of at the side. All operating levers and controls have been arranged so that they are easily accessible from the front of the machine.

Another advantage offered for the unconventional location of the wheel is that since it is entirely inclosed the coolant floods the work and the diamond truing device at all times, thus maintaining a more nearly constant temperature and reducing or eliminating contraction and expansion of the mechanism with consequent loss in the accuracy of the finished product.

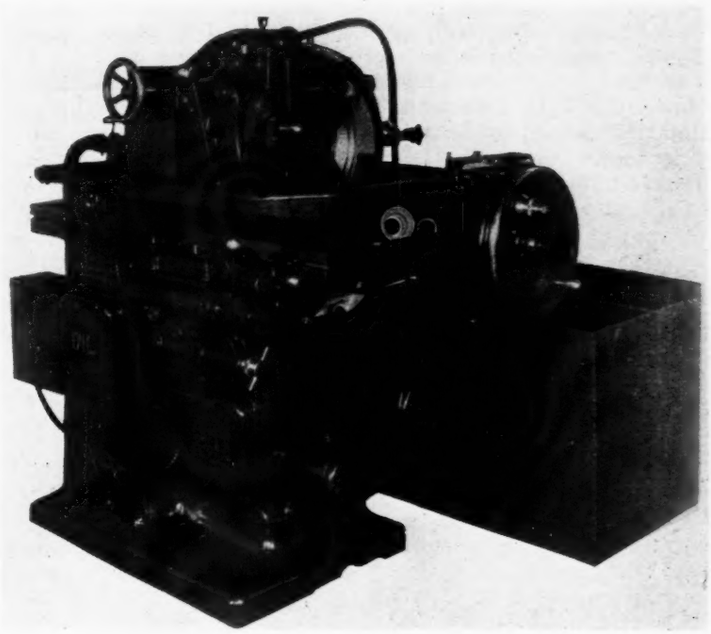
The semi-automatic sizing device of the new machine is also a new development. Automatic action of the feed screw is governed by a cam so arranged that successive strokes of the table result in progressively diminishing increments of feed. After the wheel is trued for the finishing cut definite and known feed increments are taken which will not vary since they are controlled by a cam.

This cam feed permits heavy cuts to be made with a clean sharp wheel. As the wheel dulls or becomes loaded less strain is put upon it thus minimizing the tendency of the spindle to spring. Truing the wheel by means of a fixed diamond just before the finishing cut assures an accurate, mirror-like surface.

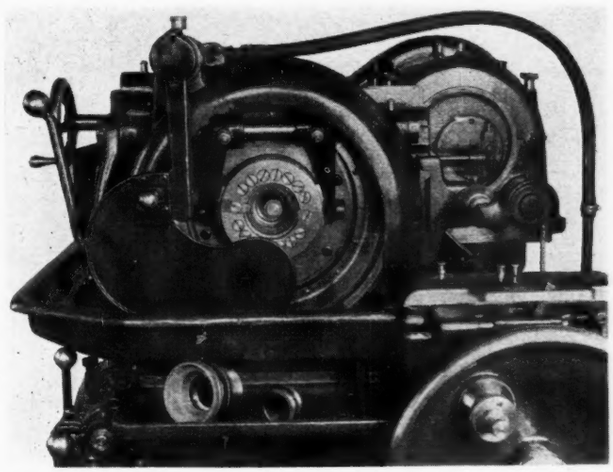
The work head is fed by means of oil under pressure providing an infinite number of feeds. The work spindle runs in a very large bearing so arranged that the work is practically inside it. This minimizes misalignment in the bearing and permits production grinding with tolerances of 0.0002 to 0.0003 in.

The No. 12 machine is regularly furnished with one work head speed for production jobs but other speeds are available by the use of train gears in a box at the end of the machine.

Ball bearings are used throughout, not only in the work head but for every revolving part, including hand-operated shafts. Only one motor is used and the machine occupies 42½ x 73 in. floor space. Present size machine grinds holes from ¾ to 3 in. diameter and 4 in. deep. The work head swivels for taper grinding.



New GTD No. 12 Hydro-Matic internal grinder



Detail of GTD internal grinder showing wheel entering from rear position of controls for front operation

Aviation Spark Plug

THE AE-9 is the designation given a new type spark plug developed by the Champion Spark Plug Co., for use in aviation engines. In designing this new plug consideration was given to the arduous conditions under which aviation plugs must operate, varying from full throttle operation to ignition off, in all sorts of weather with little protection possible for the plugs.

The new plug employs sillimanite in its construction to overcome the objections to porcelain plugs for aviation service and to afford a large range between pre-ignition and fouling.

The AE plug cannot be broken in such a way that it interferes with engine operation. Regardless of where it breaks the plug is still held together so tightly that there will be no appreciable "cutting out," nor can the plug come apart.

In the place of the standard straight top with the electrode cemented through the length of the plug, the AE type uses two pieces of insulation. The first is a

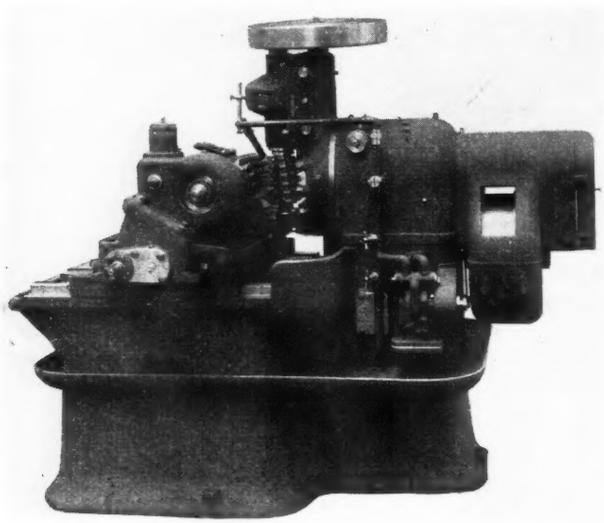
primary core with electrical clearance at the top. The second is a protecting and covering dome of sillimanite which incloses the primary core and adds to its insulating length.

The plug is of two-piece design to permit unit assembly of core and bushing. Although the AE type plug is just now being placed on the market it has received much testing both experimentally and in actual flights. Among the latter, test models of the new plug were used by Smith and Bronte in their San Francisco-Hawaii flight; by Jensen who finished second in the Dole flight to Hawaii; by Bernardi when he set a new speed record over Venice in his Macchi-Fiat plane and by Donati when he set a new altitude record over Milan in a Romeo Jupiter plane.

Pfauter Production Hobber

A NEW Pfauter high production hobber designed for heavy duty production work at high speeds on spur gears, heavy spline shafts, worms, rear axles, etc., is being marketed by O. Zernickow Co., New York.

This new machine has single pulley drive and can be arranged for direct motor drive. Hob speeds are obtained through change gears which, because of large tapered bores, can be put on or taken off quickly. The cutter head swivels to 100 deg. in either direction, the setting being made by a worm drive located inside the head.



New Pfauter high production hobbing machine

The hob is driven by a spur drive with a heavy flywheel to impart a steady motion. The hob spindle is hardened and ground and is adjustable both lengthwise and sideways. The index drive consists of an accurate worm gear and a hardened worm ground all over. The latter is adjustable in both directions and runs in an oil bath.

Principal specifications include, 10⅝ in. swing; 20⅝ in. between centers; maximum diameter 10⅝ in.; spindle bore 3⅛ in.; floor space 69 by 86 in.

New Type of Air Filter

A NEW type of air filter for cleaning air in painting departments and similar places which is made up of mats of cellulose fiber built into sectional cabinets has been developed by the National Filter Co., Chicago.

The filtering medium consists of a multi-ply blanket of cellulose material. Each ply is made up of a thin mat of fine cellulose fibers which is sufficiently open to permit easy air flow. When several plies are used the air must pass through millions of tortuous passages into which the end of the fibers project so that minute particles of dust and oil are strained out and absorbed.

A single unit consists of a sheet metal box 12 in. high by 24 in. wide by 24 in. long which has a filtering capacity of 1000 cu. ft. of air per min. These units can be used singly or in multiple installations to provide any desired capacity.

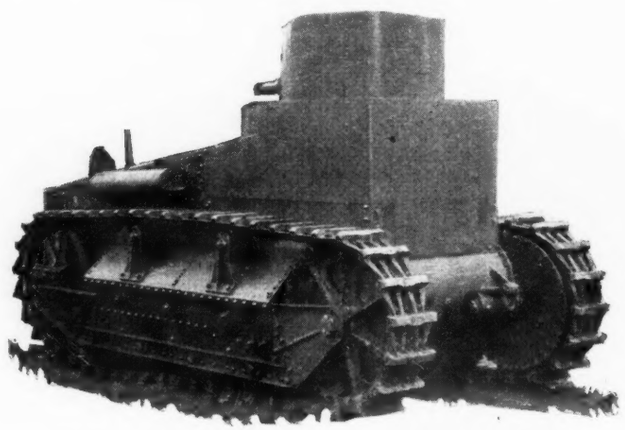
Cost of new mats of filtering material is said to be about the same as that of replacing oil in an oil filter but with decreased labor cost for the work. In addition to this type filter, a continuous type is offered in which fresh filtering material is constantly brought into service as the exposed part of the blanket becomes choked with dirt.

Army Testing 20 M.P.H. Tank

A NEW army tank having unusual speed and climbing capacity has been completed at the plant of J. Cunningham, Son & Co., Rochester, N. Y., and has been shipped to the army proving grounds at Aberdeen, Md., for final tests.

Built under the direction of army officers stationed at the automobile factory, the tank is said to be a marked departure from the type used in the World War and an improvement over any war machine of this type yet produced. Powered by a Cunningham eight-cylinder engine, it has a speed of 20 m.p.h. as compared with the six-mile maximum speed of war-time tanks. The motor, developing 120 hp., will carry the tank up a 43 per cent grade and gives it many advantages in maneuvering not possessed by old type tanks.

The tank weighs 7 tons, is 11 ft. long and 8 ft. wide and was built at a cost of from $20,000 to $25,000. Two models are being built at the Cunningham factory, one a cargo carrier and the other a turret fighting machine. The contract calls for seven tanks in all. The speed and climbing ability of the machine are said to be due to the use of the eight-cylinder motor in conjunction with a new "open work" self-cleaning tread and high mounting of the drive wheels.



New tank built for the U. S. Army in the plant of J. Cunningham, Son & Co.

25% of All Cars Sold in Europe Last Year Made in U. S.

Fourteen countries bought more American automobiles than those of other nations combined

OVER 25 per cent of all automobiles sold in 24 countries of Europe during 1927 were of American make. In 14 of these countries there were more American cars sold than those of all other countries put together.

These figures, summarized from a recent compilation made by the Automotive Division, Department of Commerce, indicate that, despite the increasing activities of foreign motor vehicle manufacturers, sales of American products are considerably more than holding their own in the highly competitive European markets.

The accompanying table shows estimated total sales for these countries, the number of American cars sold and their percentage of the total, and the number of American assembly plants in operation at the close of 1927.

In only four countries were American sales less than 10 per cent of the total sales for the year and in each one of these countries—Austria, Czechoslovakia, France and Italy—there are important domestic motor vehicle plants with which American products had to compete.

In several other countries which also produce automobiles in considerable quantities such as Great Britain, Belgium, Germany and Spain, American products were able to meet the very highly competitive conditions thus brought about with considerable success and to contribute a rather large proportion of the total 1927 sales.

In a number of countries, particularly those on and near the Scandinavian Peninsula, increased activities of European producers apparently are having little effect since American cars continue to be purchased almost to the exclusion of all others. In the table it can be seen that 85 per cent of Denmark's 1927 automobile purchases, 90 per cent of Finland's, 80 per cent of Greece's, 75 per cent of Latvia's, 84 per cent of Norway's and 80 per cent of Turkey's—to cite a few only—were American built cars.

Distribution of 1927 European Automobile Sales

By Countries of Origin

	Total Sales	Sales of American Cars	Per Cent of American Sales	No. of Foreign Assembly Plants
Austria	3,300	300	9	0
Belgium	9,000	3,500	39	2
Bulgaria	320	120	38	0
Czechoslovakia	17,560	800	5	0
Denmark	9,000	7,650	85	2
Egypt	5,500	3,500	64	0
Estonia	300	250	83	0
Finland	5,350	4,800	90	0
Germany	91,475	21,000	23	5
France	105,500	5,500	5	1
Great Britain	145,000	20,000	14	4
Greece	2,000	1,600	80	0
Hungary	3,000	1,350	45	0
Italy	11,000	1,000	9	0
Latvia	400	300	70	0
Netherlands	11,400	8,000	70	0
Norway	5,050	4,250	84	0
Poland	3,900	2,500	64	0
Rumania	6,000	4,500	75	0
Spain	24,500	13,800	56	1
Sweden	11,650	10,000	86	1
Switzerland	6,000	2,000	33	0
Turkey	1,250	1,000	80	0
Jugoslavia	2,250	1,000	44	0

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS						TRUCKS						ELECTRICS		PARTS
	Up to $1,000		$1,000 to $2,000		Over $2,000		Up to 1 Ton		1½ to 2½ Tons		Over 2½ Tons				
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value
Austria	3	$2,562	3	$4,479			144	$84,336	2	$1,028					$23,891
Azores and Madeira Islands	5	4,016	1	1,232			9	5,128	10	6,584					6,488
Belgium	307	190,115	345	406,662	73	$203,722	244	102,744			6	$4,215			136,010
Bulgaria	3	2,180					6	2,754			2	1,598			359
Czechoslovakia	10	6,798	5	6,835	5	10,964	4	2,259							5,433
Denmark and Faroe Islands	823	451,860	270	336,989	23	55,238	239	109,225	226	118,599	2	3,290			155,570
Esthonia	3	2,786													873
Finland	143	106,117	106	122,273	24	60,709	23	21,004	31	38,243	8	20,735			26,869
France	39	24,346	19	132,284	35	87,015	79	36,262	31	14,134			3	$4,275	63,945
Germany	547	292,916	327	353,760	52	151,588	1,240	241,613	12	10,415					337,071
Gibraltar															
Greece	81	47,628	4	5,084	2	5,106	7	5,132	4	3,066					12,764
Hungary	15	12,702	13	16,313			1	645							4,620
Iceland	3	1,752							4	2,467					280
Italy	94	57,962	86	105,095	6	15,928	16	6,514	2	2,720					55,814
Latvia	2	1,810					2	1,659							1,769
Lithuania	3	1,938			1	3,846			2	5,100					
Malta, Gozo and Cyprus Islands	5	3,503	2	2,142											1,055
Netherlands	113	81,173	31	39,147	11	27,192	8	4,760	11	15,612	4	6,580			61,681
Norway	71	54,471	34	39,306	1	2,098	25	21,027	19	37,628	10	19,996			12,769
Poland and Dantzig	44	31,659	28	29,183	3	7,421	16	10,703	4	4,484					4,127
Portugal	102	51,284	8	9,115			83	38,041	15	15,099					20,395
Rumania	65	40,174	34	38,403			20	12,819	2	2,563					3,618
Russia	3	1,272			2	6,877			2	1,145					19,126
Spain	318	204,726	119	124,898	50	131,933	169	83,050	14	10,146					48,458
Sweden	207	138,443	230	264,060	24	60,684	794	362,528	38	55,454	16	24,838	3	3,197	77,908
Switzerland	79	54,343	38	42,863	9	21,929									10,692
Turkey															
United Kingdom	796	395,865	53	74,544	25	71,094	690	313,247	76	50,184	12	14,913			352,896
Irish Free State	30	16,726					7	4,494	5	3,306					12,245
Yugoslavia	11	7,464	6	7,509			6	3,914	2	2,844					1,953
United States															
British Honduras	2	1,250													390
Canada	1,260	739,463	353	457,580	96	283,107	36	30,078	92	144,684	48	249,806	4	8,901	2,798,394
Costa Rica	10	8,588	20	21,501			5	3,741	8	7,642					3,503
Guatemala	6	3,605	10	13,835	2	4,979			13	30,252					9,524
Honduras	3	2,371			1	5,300	4	2,623	2	1,938					4,335
Nicaragua	6	2,209	4	4,695	1	1,756			2	1,872					1,849
Panama	54	36,223	36	40,296	4	7,482	5	3,347	12	15,951					37,386
Salvador	1	704	4	5,566	7	13,897									6,251
Mexico	549	274,291	56	70,584	24	66,789	135	72,448	80	94,206	19	87,736			89,465
Miquelon															
Newfoundland	4	1,862	1	1,128											1,389
Barbados	7	5,208							1	475					1,520
Jamaica	20	12,772	6	6,920	2	7,248	4	2,121	4	4,442					19,604
Trinidad and Tobago	16	11,355	2	2,200			1	680	1	485					4,446
Other British West Indies	16	8,535	1	1,200			16	2,527							5,414
Cuba	421	209,826	73	91,356	29	91,282	84	50,090	77	157,525	34	161,611			65,901
Dominican Republic	44	35,743	11	12,667	1	2,951	4	2,873	11	16,370					15,000
Dutch West Indies	15	11,763	8	8,678	2	4,640	5	3,510	2	1,905					6,074
French West Indies	9	5,501					2	1,129							705
Haiti	7	5,223	4	4,553			2	1,635							8,488
Virgin Islands	1	560	1	1,800											456
Argentine	1,984	1,018,408	382	406,492	104	293,031	1,741	924,321	84	146,763	48	150,926			348,462
Bolivia	11	8,001	7	9,457			2	3,254	4	3,423					3,164
Brazil	1,129	538,102	111	124,266	56	132,604	743	341,984	85	58,415	4	4,279	3	3,009	233,037
Chile	103	80,954	21	23,041	10	23,286	13	9,705	26	29,145	4	17,619			52,857
Colombia	97	93,879	35	43,649	3	5,836	28	23,758	56	86,133	4	14,350	2	13,798	81,654
Ecuador	5	3,246	7	9,460			8	3,672	3	3,611					4,407
Falkland Islands															426
British Guiana	1	926													3,900
French Guiana															26
Dutch Guiana															881
Paraguay	7	5,356	6	6,573			24	11,520	1	518					874
Peru	18	14,018	19	21,998	6	10,906	1	724	20	27,755	1	4,200	1	3,569	33,591
Uruguay	202	124,982	64	70,509	8	22,450	89	43,558	6	9,716					46,342
Venezuela	42	35,094	31	36,535	11	31,684	23	19,417	13	17,642	2	4,100			29,681
Aden															929
British India	228	170,213	66	68,510	2	5,997	183	153,794	30	30,700	1	1,360			168,475
Ceylon	35	27,897	4	4,329	2	5,801	59	50,484	39	40,731					10,749
Straits Settlements	65	51,554	1	1,121			6	3,957	5	10,284	4	4,365			40,418
China	96	59,443	13	14,212	4	8,310	39	31,495	32	37,178					27,148
Java and Madura	133	101,669	16	16,384	6	12,648	281	146,828	14	15,599	2	11,694			74,729
Other Dutch East Indies	99	69,836	3	4,432			18	11,345							15,889
French Indo-China															
Hejaz, Arabia and Iraq	12	7,469	2	2,370					1	475					6,966
Hongkong	8	6,388													17,436
Japan	191	127,853	26	33,199	21	48,917	59	39,246	3	3,387	4	30,000			283,384
Kwantung	2	805			3	6,318	10	7,443							7,516
Palestine and Syria	49	36,607	4	4,477			14	11,959	8	9,304					10,896
Persia	13	6,395	2	1,964			41	21,368	1	1,950					9,359
Philippine Islands	130	108,427	26	36,706	13	27,299	70	40,275	7	14,246	4	8,676			36,615
Russia															
Siam	6	4,796					11	6,355							4,632
Turkey	21	15,045	5	5,507	1	2,172	26	14,481	3	2,817			1	1,620	10,300
Other Asia															373
Australia	3,084	1,480,749	299	336,504	52	121,226	1,455	716,194	168	214,669	4	12,973	10	4,270	340,443
New Zealand	621	296,447	70	76,390	7	18,021	203	81,769	16	20,242	2	6,113			104,536
British Oceania			1	1,260			1	882							1,623
French Oceania									1	783					1,857
Other Oceania															
Belgian Congo	2	764							1	1,120					
British West Africa	13	8,938	18	21,283			2	2,593	28	34,396					36,434
British South Africa	742	506,489	257	275,608	14	34,306	309	159,700	37	59,762	3	12,262			156,343
British East Africa	12	9,572	9	9,806			30	26,060	5	6,314					21,211
Canary Islands	2	1,310	1	1,024			8	4,240	2	2,131					3,467
Egypt	94	57,013	32	33,085	10	25,444	141	63,775							88,324
Algeria and Tunis	2	772							1	475					69
Other French Africa	5	2,882													1,870
Italian Africa	1	832					2	718							
Liberia	3	1,785													1,127
Madagascar															
Morocco	36	21,448	1	1,053	1	3,779	28	13,424	1	475					7,922
Portuguese East Africa	35	23,498					5	3,669	5	8,580					4,354
Other Portuguese Africa	14	10,612	4	4,727			3	2,242							3,693
Spanish Africa	3	2,205							1	915					222
Total	15,732	$8,808,302	3,895	$4,612,666	849	$2,252,810	9,811	$4,646,669	1,524	$1,778,322	248	$878,235	27	$42,639	$6,877,384

for January, 1928 Canadian Exports

TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
Casings		Inners		Solids		Up to $500		$500 to $1,000		Over $1,000					
No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
462	$13,642	347	$1,162												Austria
85	878	30	55												Azores and Madeira Islands
1,801	26,837	877	8,067	4	$39					1	$1,103			$702	Belgium
						2	$772								Bulgaria
3,177	60,266	2,718	6,046												Czechoslovakia
12,520	117,501	9,470	16,452					3	$2,286					85	Denmark and Faroe Islands
															Esthonia
1,224	20,730	632	1,387												Finland
1,678	19,647	967	2,176												France
8,425	117,143	4,727	9,462							5	7,475			3,612	Germany
24	293	24	47												Gibraltar
1,497	22,883	1,000	2,336	67	2,801			6	3,198						Greece
590	7,365	457	881	10	386										Hungary
33	350	15	26												Iceland
3,239	40,241	1,609	3,075	156	5,746					6	9,565	18	$6,969		Italy
33	450	15	19												Latvia
80	2,165														Lithuania
10	150	60	164			7	2,705					6	2,151		Malta, Gozo and Cyprus Is.
3,517	56,376	2,921	5,940	4	417	4	1,932			4	4,340			212	Netherlands
269	4,591	206	472	2	71	2	666			6	7,934				Norway
2,353	30,518	1,868	3,814							2	2,311				Poland and Dantzig
1,584	19,739	1,376	2,767												Portugal
52	507	94	131			25	9,644	2	1,190						Rumania
264	6,829	128	451	20	746					5	5,868			151	Russia
4,618	99,730	1,448	3,830	56	8,848					1	1,502			14	Spain
2,633	41,689	7,955	24,368	3	89					2	2,311			2,727	Sweden
1,029	17,869	1,025	3,557	10	669					1	1,010				Switzerland
								2	1,452						Turkey
4,601	52,815	1,198	3,518	148	2,971			327	244,580	136	172,554			3,671	United Kingdom
350	3,920	100	156											61	Irish Free State
220	2,439	100	220							1	1,502				Yugoslavia
						10	2,675	1	900	2	4,090	1	700	2,227	United States
42	536														British Honduras
707	13,067	2,808	5,630	32	642										Canada
308	5,796	143	366							1	1,115				Costa Rica
507	9,468	254	872			1	372	2	1,036	4	4,580	18	6,969		Guatemala
38	718	79	157	38	1,975			1	544						Honduras
44	1,263	102	305												Nicaragua
1,004	9,376	876	4,618	43	1,264	13	5,015			9	10,944			33	Panama
290	4,965	203	493	30	1,126	5	1,872	5	2,665			2	774		Salvador
4,901	59,467	3,255	6,943	46	1,343					12	15,716				Mexico
														11	Miquelon
24	247					1	150							20	Newfoundland
106	1,030	92	186	6	227	2	946	1	516			12	4,983		Barbados
137	2,367	51	101	64	2,107			17	14,016	5	5,752	76	29,425		Jamaica
310	6,294	264	700	14	259	1	450	6	4,462	1	1,060	2	554	88	Trinidad and Tobago
80	875	55	53	2	131	5	2,051					4	1,550		Other British West Indies
5,073	66,363	6,356	12,445	610	26,097					4	5,206				Cuba
748	11,514	449	1,135	89	3,908					3	3,410				Dominican Republic
149	2,234	183	385			2	749	1	602	1	1,154				Dutch West Indies
90	902	99	205			2	749					4	1,549		French West Indies
643	9,568	728	1,531									6	2,323		Haiti
32	301														Virgin Islands
35,816	405,267	17,441	38,201	803	22,893	128	51,500	23	16,120	63	78,110			2,808	Argentine
199	4,659	236	660			3	1,198	3	1,577	1	1,473	4	1,451		Bolivia
10,229	93,783	6,905	12,974	90	3,133	14	6,822	8	6,245	25	26,644			20	Brazil
1,339	23,863	1,198	2,864	144	7,533	14	5,964	4	3,514	8	9,446	56	22,537		Chile
2,346	42,460	2,654	6,753	37	2,196					10	11,963	46	19,076	103	Colombia
312	4,950	537	1,312	2	168									26	Ecuador
															Falkland Islands
						4	1,521					4	1,676	1,427	British Guiana
															French Guiana
14	106	14	22			2	754								Dutch Guiana
220	4,647	254	516							2	2,401	20	7,510		Paraguay
1,667	30,788	1,641	4,546	13	408									12	Peru
2,857	32,442	763	1,874	35	1,925	21	8,963	2	1,565	3	3,923			181	Uruguay
2,390	40,417	1,415	3,234	6	111	1	375			3	3,410	56	21,951		Venezuela
148	1,530	134	190											758	Aden
7,763	90,961	3,024	6,359	117	3,541	261	100,617	68	56,550	39	49,354	896	329,374	14,995	British India
1,092	19,559	520	1,142	46	1,139			11	8,456	2	2,062	20	7,268	3,356	Ceylon
6,501	57,501	2,379	3,913	63	1,405									17,816	Straits Settlements
2,660	29,658	2,033	3,468	68	1,200	5	1,925	2	1,716						China
2,874	41,021	2,093	3,903	54	2,918										Java and Madura
1,270	14,039	1,152	2,060			3	1,110	8	7,922	18	22,490			10,535	Other Dutch East Indies
350	5,265														French Indo-China
369	5,441	221	535	35	1,502	4	1,543			1	1,156	2	576		Hejaz, Arabia and Iraq
441	6,754	441	1,040					5	4,384	1	1,149				Hongkong
15,028	158,329	13,825	21,578	779	18,695			5	2,983	4	4,989				Japan
															Kwantung
673	10,362	336	773			16	6,173							216	Palestine and Syria
312	5,121	275	772									10	3,872		Persia
7,841	91,141	7,326	15,558	191	4,096										Philippine Islands
															Russia
881	9,899	1,025	1,595											254	Siam
															Turkey
															Other Asia
5,403	88,627	2,736	5,988	412	19,052	144	56,560			1	1,406			4,282	Australia
543	6,868	18	68	150	6,723	13	6,318	11	9,030	1	1,121			2,211	New Zealand
19	374											1	377	61	British Oceania
36	925	41	185	2	90										French Oceania
										1	1,200			447	Other Oceania
12	170	11	29			3	942	1	572			6	2,352		Belgian Congo
758	29,739	808	3,141			36	13,576	10	6,662			62	22,988	3,663	British West Africa
656	9,892	366	1,294	38	1,220	20	8,446	43	33,568	3	3,402	1	499	3,177	British South Africa
703	15,943	743	1,852	3	374	27	11,117	4	3,240	2	2,267	156	60,660	1,961	British East Africa
336	6,374	176	444	16	854					1	1,121				Canary Islands
1,083	13,835	1,060	1,959	83	2,191	38	14,804			9	11,812	146	56,259	50	Egypt
82	707	82	93												Algeria and Tunis
												26	10,066		Other French Africa
2	15														Italian Africa
4	39														Liberia
															Madagascar
410	8,213	318	1,007	12	381	3	1,291	3	3,000	1	1,121				Morocco
16	99														Portuguese East Africa
52	591	122	231												Other Portuguese Africa
168	2,740	184	442									3	1,180		Spanish Africa
187,476	$2,409,028	131,871	$289,279	4,653	$165,610	842	$332,267	585	$444,551	411	$512,522	1,664	$627,619	$81,973	Total

AUTOMOTIVE NEWS SECTION INDUSTRIES
Philadelphia, Pennsylvania March 31, 1928

Dealer Stocks Conservative as Second Quarter Begins

PHILADELPHIA, March 31—The automotive industry is entering the second quarter of the year with stocks of cars in dealers' hands considerably lower than normal for the period and as result capacity operations are in effect in practically all factories. Reports for March will show new high record figures in many plants with a considerable number setting up new production marks for the quarter.

Dealers' stocks are low mainly for the reason that a much larger volume of retail buying has been developed in March than in recent years. Throughout the country good weather has prevailed for most of the month and the unseasonably warm weather of the past week has brought a demand for deliveries which has made large inroads in wholesale stocks. Conservative factory operation in the early months coupled with vigorous sales effort likewise has worked to keep surplus stocks lower.

Increasing employment in industrial centers is making for better movement of used cars, this improvement being especially noted in Middle Western and Great Lakes cities, though Eastern cities also are finding conditions much improved. The used car situation also has been helped by the continued delay of Ford operations.

Increased Shipments Lower Tire Stocks

NEW YORK, March 28—Inventories of all types of pneumatic casings and inner tubes as of Feb. 1 showed a marked decrease in spite of increased January production, according to the Rubber Association of America. Comparative figures follow:

	Inventory	Production	Shipments
Balloon Casings			
Jan. 1928..	3,656,537	2,377,299	2,489,391
Dec. 1927..	3,844,039	1,824,668	1,710,893
Jan. 1927..	3,119,263	1,793,778	1,794,623
Balloon Inner Tubes			
Jan. 1928..	4,408,235	2,411,124	2,539,535
Dec. 1927..	4,523,047	1,617,875	1,734,026
Jan. 1927..	3,977,723	1,840,966	1,965,152
High Pressure Cord Casings			
Jan. 1928..	3,605,064	1,684,750	1,496,047
Dec. 1927..	3,649,536	1,487,624	1,368,158
Jan. 1927..	4,067,010	1,785,904	1,744,469
High Pressure Inner Tubes			
Jan. 1928..	5,328,071	1,669,894	2,014,744
Dec. 1927..	5,745,949	2,108,924	1,800,026
Jan. 1927..	7,711,148	2,161,600	2,547,121

Thomas Succeeds Begg

DETROIT, March 28—S. R. Thomas has been appointed chief engineer of the Jordan Motor Car Co., it was stated today by President Edward S. Jordan. Mr. Thomas succeeds S. Russel Begg, resigned.

Campbell is Named Willys Sales Head

TOLEDO, March 29—The appointment of Colin Campbell as vice-president in charge of sales of Willys-Overland, Inc., was announced today by John N. Willys, president. George M. Graham is also made a vice-president to be associated with Mr. Willys and L. A. Miller, first vice-president, in the management of the business. L. G. Peed, for many years general sales manager, continues in that capacity.

Mr. Campbell is widely know in the industry as a sales executive. As general sales manager of Chevrolet Motor Co. he brought the sale of Chevrolet cars to approximately the half-million mark annually. On his resignation from Chevrolet he served as vice-president and general manager of Durant Motors, Inc., resigning about a year ago to form the Colin Campbell Corp., a business advisory organization.

Mr. Graham returned to the Willys organization last year as assistant to Mr. Willys. He has been a vice-president of the Pierce-Arrow Motor Car Co. and of Chandler-Cleveland Motors Corp. and is an active figure in National Automobile Chamber of Commerce activities.

Golf Course to be Built at Indianapolis Track

INDIANAPOLIS, March 29—An eighteen-hole golf course will be constructed on the speedway property; the acres forming the grounds will then be turned into a year-'round recreational center instead of attracting the public but one day of the year as in the past, it has been announced by E. V. Rickenbacker, president of the syndicate that operates the track.

McKim Joins Federal

DETROIT, March 29—C. D. McKim, formerly sales executive of Continental Motors Corp. and later sales manager of Hercules Motors Corp., has been appointed advertising manager of Federal Motor Truck Co.

Sees Railroads Soon in Aviation Service

WASHINGTON, March 28—A prediction that the railroads would enter into a new field of service, that of passenger-carrying planes, was expressed this week by Second Assistant Postmaster General Glover. He stated that the daily average of flying in the Post Office service is 14,694 miles, and by July 1, will be 25,000 miles. In conjunction with the buses' absorption of literally thousands of miles of railroad passenger service, he said that "the railroads of this country are not going to be caught asleep again, and it is for that reason that the great railroad systems, East and West, are thinking about what part in the picture of transportation the passenger-carrying airplane is going to assume."

Dodge Brothers to Build 1500 Daily During April

DETROIT, March 28—Dodge Brothers production is running along at approximately 1100 units daily, said John R. Lee, general sales manager, adding that the schedule will be stepped up to about 1500 units a day by the first week in April. Of the April schedule approximately 1300 passenger cars and 200 commercial vehicles will be built daily.

Used car stocks are lower than during the corresponding period a year ago and new car stocks in dealers hands are also in a favorable position, said Mr. Lee. "I believe business during the second quarter should be better than the first. All of our 25 district offices report greatly improved conditions in the field. They have particularly noted a rapidly increasing improvement during the past 60 days and there is every indication that it will continue in a favorable condition through the second quarter."

Federal Offers Speed Truck

DETROIT, March 27—Federal Motor Truck Co. is offering a new 1½ to 2 ton model (A6), which is designed for higher road speed at full safety. The new model has a six-cylinder, seven-bearing Continental engine developing 67 hp. at 2700 r.p.m. A four-speed transmission is mounted amidships while bevel gear drive is used for the rear axle. Hydraulic four-wheel brakes are standard. The radiator shell is chrome plated. Wheelbase lengths of 151 in. and 163 in. are available.

Treasury to Report Tax Funds April 3

Action on Revision Waits Report—McLaughlin Sees Excise Eliminated

WASHINGTON, March 29 — Announcement that the Treasury Department would have available tax returns by April 3 was made this week. Based on this return to Congress hangs the fate of the tax reduction program, which in its present state, as it passed the House, provides for the complete elimination of the 3 per cent tax on passenger cars. The elimination of the passenger car tax accounted for $65,000,000 of the $289,000,000 tax reduction program. Preliminary figures on March 27 indicated that the Treasury Department would not recommend more than a $200,000,000 reduction.

Irrespective of the amount of reduction, a prediction has been made by Congressman James C. McLaughlin of Michigan, who has long been active for the elimination of the automotive tax, that it will be completely repealed at the present session of Congress.

Spokesman for the President announced on Wednesday of this week that the President would approve any recommendations for tax reduction that might be made by Secretary Mellon. In the original tax program, Secretary Mellon's program urged the retention of the 3 per cent automotive tax, which, however, was overwhelmingly defeated both in the committee and on the floor. The tax measure is now with the Senate finance committee.

Those conversant with the long fight that has been waged for the repeal of the automobile tax, are confident that it will be fully repealed at this session. The outstanding hazard, however, is that Congress will vote too large a tax reduction and that the President will veto the entire bill. This probability, it is felt, however, is remote.

Hennecke to Sell Cleveco

NEW YORK, March 26—Earle V. Hennecke, Inc., will act as the exclusive sales department to the automotive trade in the distribution of products of the Cleveland Varnish Co. The products are sold under the trade name "Cleveco."

Begg Joins Budd Wheel

DETROIT, March 28 — S. Russel Begg has been appointed chief engineer of the Budd Wheel Co. and also associate chief engineer of the Edward G. Budd Mfg. Co. at Detroit, it was announced today by Hugh Adams, vice-president. Mr. Begg resigned as chief engineer of the Jordan Motor Car Co. to join the Budd organization.

Stinson Builds $7,000 Plane

DETROIT, March 26—Construction is being completed on the first of a new series of lower priced planes at the factory of the Stinson Aircraft Co. This machine, a three to four-passenger monoplane, will list probably around $7,000, as compared with $11,000-$12,000 for the Stinson-Detroiter. The new series will be powered with the recently developed Warner 125 hp. air-cooled radial engine which is now being put into quantity production here in Detroit.

New Howard Co. Buys Detroit Plant

DETROIT, March 28 — Announcement has been made by J. Howard Rees, president of Howard Motors Corp., of the acquisition of the former Acme Brass Works factory in Detroit. The Howard company was organized a short time ago to build passenger cars and trucks for export only. In addition to Mr. Rees the officials of the new company include L. P. Chittenden, of the Ryan Sales Engineering Co., vice-president; H. B. Trix, director, and R. E. Fremont, secretary and treasurer.

It is expected that production will begin on April 5 with 100 cars scheduled for April. Four chassis models will be offered, including two sixes and two straight-eights, ranging in price from $615 to $2,485. The lowest priced model is a 103-in. wheelbase six rated at 15 hp. In addition there are a 20 hp. six with 110-in. wheelbase, a 120-in. 24 hp. straight-eight, and a 134-in. 29 hp. straight-eight. Touring cars, roadsters and sedans will be offered on each chassis.

Two six-cylinder truck models rated respectively at ¾ and 1½ tons will be added to the line as soon as passenger car production is well under way. These also will be exclusively for export.

Moto Meter Earns $720,259

NEW YORK, March 29—Moto Meter Co., Inc., and subsidiaries report net income for 1927 of $720,259 after all charges and taxes. This is equivalent to $3.60 a share on the no par Class A and common stock and compares with net income for 1926, excluding the National Gauge & Equipment Co., of $1,561,973, equivalent to $4.56 a share on Class A and $3.13 on Class B stock.

Takes Over Air Routes

NEW YORK, March 28—Additional air express service has been announced by the American Railway Express Co. which will extend its lines on March 31 to include the Northwest Airways between Chicago, St. Paul and Minneapolis and the Embry-Riddle routes between Chicago and Cincinnati.

Names Leeds, Tozzer & Co.

NEW YORK, March 26—The Cleveland Electric Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, Ohio, has appointed Leeds, Tozzer & Co., Inc., this city, as representative in New York territory.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co.

NEW YORK, March 29—Under the stimulus of continued easy money the record-breaking activity and volatile upturn in prices upon the stock market again occupied the center of attention in the financial markets last week. Call money ruled officially at 4¼ to 4½ per cent, although it was obtainable for a concession in the outside market. The increase of $32,650,000 in brokers' security loans reported last week was unexpected in the face of the enormous turnover of shares.

FEDERAL RESERVE REPORT

During the past week, however, developments in the fundamental credit structure were not of a nature to encourage further speculation. Total bill and security holdings of the Federal Reserve banks declined $22,000,000, while the total gold reserves of these institutions decreased $10,900,000. Gold exports of approximately $74,900,000 so far this month indicate that the high record of shipments amounting to $75,000,000 established last December may be exceeded. Imports this month have been negligible.

Other changes in banking conditions during the week ended March 21 reflect a smaller demand for funds than in the preceding week. Loans and discounts of member banks reporting to the Federal Reserve System declined $55,491,000 and net demand deposits decreased $344,829,000, while investments rose $116,225,000. Circulation of Federal Reserve notes during this interval contracted $8,800,000, while total deposits declined $43,200,000.

FREIGHT CAR LOADINGS

As indicated by the volume of railway freight transported, business still continues under the level of last year and two years ago. Loadings of railway revenue freight during the week ended March 10 numbered 951,553 cars, as against 959,537 cars in the preceding week and 1,000,754 cars in the like period a year ago. So far this year the volume of revenue freight loadings amounts to 8,948,507 cars, which compares with 9,549,195 cars last year and 9,326,462 in the corresponding period of 1926.

RETAIL BUSINESS

Trade is showing some seasonal improvement, though unfavorable weather and unemployment have hindered retail sales from expanding to the degree anticipated. Employment at Detroit continues to increase.

BANK DEBITS

Bank debits to individual accounts, as reported to the Federal Reserve Board for the week ended March 21, were 20 per cent above the total of the preceding week and 31.2 per cent greater than the total in the corresponding period a year ago. The figure for this year, however, includes the large volume of March 15 transactions, while these did not appear in last year's total.

Ford Says Schedule Nearing 2000 Daily

Will Reach This Total April 1 and Plans 5000 Cars Daily by July

DETROIT, March 26—Ford production has now reached 1500 completed automobiles daily and this will be increased to 2000 daily on April 1, Henry Ford stated today in revealing production plans which will mean that by early summer Ford Motor Co. will again be a big factor in the small car field. Mr. Ford said that from now on production will be increased reaching 5000 units by July 1.

Mr. Ford said that half of the company's assembly plants in the United States will be operating by April 1 and that by July 1 the company expects to have every assembly plant in the country producing new cars.

"We are turning out units for the new cars in daily increasing numbers at the Fordson and Highland Park plants. We have 15 or 16 assembly plants that will be producing April 1, that will require the greater portion of these parts but some of them will be sent to stock-up the remaining plants around the country preparatory to turning out assembled cars everywhere in the United States. Another problem that is being solved quickly is the stocking of our dealers with service parts. Every dealer soon will have a complete set of parts on hand. Many have now." Mr. Ford stated that the car being produced is virtually the same as when introduced with the exception of the change in brakes.

Plane Output Now One Weekly

DETROIT, March 26—Production of all-metal airplanes at Ford Motor Co. will be doubled next month with one trimotored monoplane scheduled for production each week thereafter. According to William B. Stout, the company is at present 30 planes behind in orders, representing business on hand of about $1,350,000. Some of the new planes will be used in extending the Detroit-Cleveland Airline to Pittsburgh. Since June 1, 1927, the sight-seeing planes located at the Ford Airport have carried 19,000 passengers.

Ross Shipments Gain 40%

LAFAYETTE, IND., March 27—Shipments of Ross cam and lever steering gears in February were greater than in any previous single month in the history of the Ross Gear & Tool Co. The number of units shipped during the month exceeded by 40 per cent shipments for February last year. The increase includes gears shipped both for standard equipment and replacement use. Replacement units for 10 makes of cars not standard equipped with Ross are now in regular production, and sales in this division have shown a large gain.

Car Taxes Outstrip Registration Growth

WASHINGTON, March 28—Taxation of automobiles by the states is increasing three times as fast as the motor vehicle registration, according to a survey made by the American Automobile Association, based on figures for 1927. The average per vehicle tax for the country increased 10 per cent in 1927 over 1926, while the total increase of motor vehicle registration for the United States was 5.6 per cent, the increase in the total amount of special car taxes for the 48 states being 16.1 per cent.

Wilson Foundry to Build 36,000 Engines in April

PONTIAC, March 24—Wilson Foundry & Machine Co. expects to shatter all previous production, payroll and employment records in April. According to D. R. Wilson, vice-president and general manager, the company will manufacture 36,000 engines in April, an advance of 8250 over the March schedule of 27,500.

"Business never looked as good for us as does the first half of 1928, Mr. Wilson said. Knight engine production is now on a level with 1927 and April production will show a 30 per cent increase over April, 1927. During April we will be working all departments of the plant night and day to supply the demands of the Willys-Overland Co."

271 Planes, 2 Dirigibles Provided in Navy Bill

WASHINGTON, March 28—Two items of interest to manufacturers of engines were included in the $359,190,000 navy bill which was up for discussion this week on the floor of the House. The bill, as formally reported by the appropriations committee, provides for two dirigibles, each two and one-half times the capacity of the Los Angeles, at a total cost of $8,000,000. Each ship would have a cruising radius of 4050 miles at a maximum speed of 75 knots, or a radius of 11,200 miles at 40 knots. The bill further provides for the construction of 271 new airplanes as the third year increment of the five-year naval aviation program. The committee reported favorably the retirement of 238 obsolete planes.

Auburn Has 5000 Orders

AUBURN, IND., March 26—Auburn Automobile Co. has on hand unfilled orders for over 5000 cars with factory value of $8,500,000 for delivery before May 15. The company has been hampered in deliveries for the past 30 days due to delay in receipt of shipments from parts makers, but this has now been corrected.

A.A.A. to Continue Tax Repeal Effort

Will Also Seek Continuance of Federal Aid—Opposes Toll Proposals

WASHINGTON, March 28—Three major programs of interest alike to the motorist and the automobile manufacturer were endorsed this week and will be pushed by the American Automobile Association, it was decided at the annual meeting here of the National Motor Congress of the American Automobile Association, attended by 500 delegates representing 1046 motor clubs.

Of prime importance was the program for Federal highway aid which the association declared was of the most vital interest to the growing motor traffic of the country. The association voted to work for a continuance of the $75,000,000 annual appropriation and to oppose private interests in the operation of toll bridges. A greater need for nation-wide safety among automobile drivers was stressed and the association formulated a program to be accomplished through education and an endeavor to eliminate the hazards of street and highways.

The third major program was a continuation of the efforts being made to abolish the 3 per cent excise tax, now part of the tax repeal bill before the Senate. Speakers before the fourth annual congress included Senator Tasker L. Oddie of Nevada, who spoke on Federal-Aid and declared that "it is our duty now to start a new program for wider and stronger roads in the Eastern States where traffic is heaviest."

Other speakers included Thomas H. MacDonald, chief of the Bureau of Public Roads; Representative James C. McLaughlin of Michigan, who spoke on the elimination of the 3 per cent excise tax; Thomas P. Henry, president of the organization; Clarence Chamberlin, trans-Atlantic flier; Paul Hoffman, vice-president of the Studebaker Corp.; C. A. Vane, manager of the National Automobile Dealers' Association; Clarence J. McLeod and Robert H. Clancy, representatives of Michigan, who have been active in the 3 per cent automotive excise tax repeal, and numerous other officials of the American Automobile Association.

Jordan Increases Schedule

CLEVELAND, March 26—Jordan Motor Car Co. has scheduled 50 per cent more cars for production in April than in March, with the output almost entirely spoken for in advance. March output will be 50 per cent larger than the February total. Shipments to date are almost double those for the first quarter of last year, with exports more than tripled, Edward S. Jordan, president, said. Dealers are ordering further ahead, Mr. Jordan said, indicating confindence in continued retail buying.

Bauer Sees Cartel Unlikely in Europe

International Bureau More Disposed to Developing General Markets, He Says

NEW YORK, March 24 — Certain circles have been agitating themselves recently by reports to the effect that European automobile manufacturers would attempt to establish a cartel with a view to barring American automobiles from the home markets.

These rumors, however, are regarded by those who are better informed as not sufficiently well grounded to form any basis for worry. Some such suggestion was made at a meeting of the Bureau Permanent International des Constructeurs des Automobiles held several months ago, but George F. Bauer of the National Automobile Chamber of Commerce, who was at that meeting, advised those present that instead of attempting to restrict the market by barring certain manufacturers the function of the bureau should be to develop a broader market so that there would be room for all producers to dispose of their goods.

This, he pointed out, should be done by the removal, or at least the lowering, of luxury taxes which are now in vogue in most of the European countries which make it almost impossible for any manufacturer, either domestic or foreign, to sell cars to any but the very wealthy. Mr. Bauer's suggestion seemed at the time to meet with favor among the manufacturers and he now regards it as unlikely that they will seriously attempt any move toward barring American automobiles from world markets.

The American industry, through the N.A.C.C., is a member of the Bureau Permanent International des Constructeurs des Automobiles and it is regarded as extremely unlikely that this bureau will undertake any activity detrimental to one of its members for the problematical benefit of other members.

1927 Aircraft Exports Increase to $1,903,460

WASHINGTON, March 28 — Aircraft exports during 1927 broke all previous records, according to the Department of Foreign and Domestic Commerce. Exports of planes, engines and parts were valued at $1,903,460, being 85 per cent more than the 1926 exports and 143 per cent higher than the 1925 exports. Shipments included 63 planes, 84 engines and $570,117 worth of parts, not including tires. The shipments went to 20 foreign countries, the leading one being Canada, followed by Peru, Chile and Russia in the order named. Canada's share of the total shipments was approximately $302,000.

Belgian Car Owners Seek Tax Reduction

WASHINGTON, March 28— A concerted "rebellion" by the 135,000 automobile owners in Belgium against the present high automobile taxation is reported to the Department of Commerce by its trade commissioner at Brussels. The principal protest is against the imposition of a 10 per cent luxury tax, which is imposed every time a car is sold. As an entering wedge, the Belgium automobile trade and industry have petitioned the King and Prime Minister to at least eliminate the 10 per cent luxury tax so far as second-hand cars are concerned. A reduction in the gasoline road tax and more expenditures for highways are among the things being asked by the motorists. The Department states that 40 per cent of Belgium's number of automobiles are of American make.

British Make Headway in Indian Car Market

WASHINGTON, March 28—Imports of passenger automobiles into India during the first quarter of this year indicate a material increase over the preceding quarter, according to advices to the Department of Commerce. Imports of British makes for the three months ending in January showed a remarkable increase. American and Canadian sales are slightly lower, largely due to anticipated new models in American low price, light weight cars, and rumored priced reductions on several other makes. The trend of Fiat sales is downward, despite satisfactory increase in 1927. Truck business is good, accessories moving well, but price cutting by small dealers continues. The general outlook is very good and public demand is growing.

Sells 92 Packards in Day

NEW YORK, March 24—Packard Motor Car Co. of New York will experience one of the biggest selling years in its history, in the opinion of Lee J. Eastman, president. Evidence to date shows a growing demand for Packard cars. On Saturday, March 17, dealers and branches in the New York territory delivered 92 Packard cars, amounting to approximately $307,000 worth of business.

Gardner Adds Dealers

ST. LOUIS, March 26—An expansion within recent months of approximately 30 per cent of new dealers and distributors, was reported this week by Russell E. Gardner, Jr., president of Gardner Motor Co., Inc.

Mass Distribution Now Industry's Task

Business Must Broaden Scope, Allen Tells G.M. Ohio Dealers

COLUMBUS, March 24—"With mass production in industry pretty well solved, mass distribution and selling are now the biggest problems to be solved," said Floyd Allen, assistant to the president of General Motors Corp., at a meeting of approximately 300 dealers of the company throughout central Ohio, held this week.

He said that every business must broaden its scope because of keen competition. He explained that banks and drug stores have done this and it is up to automobile dealers and distributors to do likewise. He explained that the General Motors Corp. in paying $144,000,000 in dividends last year only earned half that amount on automobiles and the remainder on a score of subsidiary concerns.

A delegation of Columbus citizens met Mr. Allen and escorted him to the Deshler-Wallick Hotel where the dinner and business meeting was held. This delegation was headed by J. J. Munsell, Columbus distributor for Delco Light products. Distributors and dealers in all General Motors products attended the meeting.

Schwab Named President of Worcester Company

WORCESTER, MASS., March 26—Louis Schwab was elected president of Stevens Walden-Worcester, Inc., at the annual meeting, and J. V. Critchley, whom he succeeded, was named chairman of the board. On the formation of the present company, Mr. Critchley agreed to continue as president during 1927 to enable Mr. Schwab, who formerly headed Stevens & Co., to become familiar with the new combined business. John Macaulay was elected treasurer. The company is opening a Pacific Coast office and warehouse in San Francisco with H. O. Barr as manager.

La Crosse to Scrap Cars

LA CROSSE, WIS., March 24—Following the example of Milwaukee and Madison, Wis., dealers, members of the La Crosse Automotive Dealers Association have formed the La Crosse Auto Dealers Salvage Co. and expect to start work April 1. Twelve hundred bins for parts are being provided. The enterprise contemplates the salvaging of at least 350 "junk" cars during the present year.

Foote Names Representative

CHICAGO, March 27—Bentley & Holmgren, Court Exchange Bldg., Bridgeport, Conn., has been appointed to represent Foote Bros. Gear & Machine Co. in Connecticut and western Massachusetts.

Men of the Industry and What They Are Doing

Dunwoody is Appointed Gardner Vice-President

At the first meeting of the board of directors of Gardner Motor Co., Inc., following the annual stockholders' meeting, announcement was made of the personnel of the new directorate. Russell E. Gardner is chairman of the board, and other directors are Russell E. Gardner, Jr., Fred W. Gardner, W. K. Gardner, T. R. Reyburn and Oliver Anderson, all of St. Louis, and Alvin Devereux of New York, who was added to the board.

Officers are: Russell E. Gardner, Jr., president; Fred W. Gardner, executive vice-president and treasurer; L. C. Freeman, vice-president; Halsey Dunwoody, vice-president; Thomas R. Reyburn, secretary; R. E. Lynes, assistant secretary, and S. J. Lusby, assistant treasurer. Mr. Dunwoody, who was elected vice-president, has been general sales manager of the Gardner company since February, 1926. He is at present visiting Pacific coast distributors. Upon returning to St. Louis about April 1, Mr. Dunwoody will become assistant to President Gardner.

White Promotes Rathbun

Jay Rathbun has been appointed vice-president of the Eastern region of the White Co., with headquarters at 17 Battery Place, New York. Mr. Rathbun has been a vice-president in charge of the export department of the White company since 1926. His service with White dates back to 1911 when he was manager of sales for New York State, rising from this to manager of export sales in 1914. Mr. Rathbun is now returning to the United States after a visit to South American branch offices and dealers.

R. K. Jack Opens Office

Robert K. Jack, for seven years chief engineer of the Olds Motor Works, has opened up an engineering office in the Tussing Building at Lansing. Mr. Jack has surrounded himself with a staff of engineers and will act in a consulting capacity, and will also have a blue print and Vandyke service.

Leibold on Fair Board

E. G. Leibold, secretary to Henry Ford, has been made a member of the Michigan State Fair Board by Governor Fred W. Green. Mr. Leibold succeeds John Ford, brother of the automobile manufacturer, who died recently.

Woodin on Surety Board

William H. Woodin, president and chairman of the board of the American Car & Foundry Co., has been elected a member of the board of the American Surety Co.

C. H. Smith to Speak on Russian Outlook

Overseas Automotive Club will be addressed at its next regular meeting, April 12, by Charles Hadden Smith, past president of the American Russian Chamber of Commerce, who will speak on the Russian economic situation and the possibilities for American trade. Mr. Smith is an American railway construction engineer and has spent much time in Russia since 1916. During part of this time he was appointed as aid to the vice-minister of communications and later served as the American representative on the inter-allied railway committee which was in charge of the Chinese-Eastern and Trans-Siberian railways.

Raskob Sees High Earnings

John J. Raskob, chairman of the finance committee of General Motors Corp., leaving for a combined vacation and business trip to Europe, expressed confidence that new sales and earnings records will be hung up by General Motors this year. The corporation now is running 25 per cent ahead of last year's sales at this time, he said, and profits for the first quarter will exceed those of any corresponding period in the past.

Kemp Detroit Sales Head

William E. Kemp has been appointed Detroit district sales manager of Kingston Products Corp., with offices in the General Motors Building. Mr. Kemp has been connected with Kingston Products company and its predecessor companies for 18 years, serving as manager of the Chicago, New York and New England branches.

Lewellen Convalescent

W. G. Lewellen, assistant sales promotion manager of Chevrolet Motor Co., is recovering in a Columbia, S. C., hospital from an operation for appendicitis. Mr. Lewellen was taken ill in Columbia while on tour with other Chevrolet executives.

Steinmetz Forms Company

T. P. Steinmetz, former sales promotion manager of Commercial Investment Trust Corp., has formed the Paul Murchison Co., Inc., to act as sales representative and New York distributor.

P. O. Peterson is Named Purchaser by Studebaker

P. O. Peterson has been appointed purchasing agent of the Studebaker Corp. of America, succeeding A. J. Chanter who was recently made manager of branches. Mr. Peterson has been a member of the Studebaker organization for the past eight and one-half years, having been assistant purchasing agent prior to his advancement to his new position.

Strouse Heads Advertisers

Harold Strouse, advertising manager of the Harnischfeger Corp., Milwaukee, has been elected president of the Milwaukee Association of Industrial Advertisers, filling the vacancy caused by the death of Howard A. Winton, who was general manager of branches of the Heil Co., truck bodies, tanks, hydraulic hoists, etc.

Compton to Take Office

Col. R. Keith Compton of Richmond, Va., will become president of the American Road Builders' Association at the annual meeting of the organization in Washington, May 11. Colonel Compton is director of public works of Richmond. He succeeds C. M. Babcock, chairman of the Minnesota State Highway Commission.

Hall Heads Hoist Association

N. A. Hall of the Sprague Hoist Division, Shepard Electric Crane & Hoist Co., was elected chairman of the Electric Hoist Manufacturers Association at the annual meeting in New York. H. J. Fuller, Yale & Towne Mfg. Co., was elected vice-chairman. Reports submitted at the meeting indicate that electric hoists are now being used in 95 industries.

Norton Joins Distributor

Walter W. Norton, formerly vice-president of the Autocar Co., Ardmore, Pa., has been appointed general manager of the Counties Motor Co., Norristown, Pa., distributor of General Motors trucks in the three counties adjoining Philadelphia.

Kirby Returns to Peerless

S. I. Kirby has rejoined the sales department of Peerless Motor Car Corp. He previously had been New York branch manager, and sales manager of the distributors' division, for Peerless, joining the company in 1922.

Goldman Back From South America

George Goldman of North East Service, Inc., has returned from a trip through South America where he established service representatives of the company in many principal centers.

Parker Changes Bill to Regulate Buses

Substitute Measure to Overcome Objections is Offered in Congress

WASHINGTON, March 25—A new bill for the regulation of interstate buses, operating over public highways, designed to meet the objections both to the proposed Flynn report of the Interstate Commerce Commission and to the former Parker bill, was introduced in the House this week by Rep. James S. Parker, chairman of the House committee on interstate and foreign commerce.

The high lights of the bill are as follows: The first and second sections relate to definitions and administrative features of the act, known as H. R. 12380. Section 3 requires that future applicants for licenses must apply to a state commission for a certificate of public convenience. Companies who have been in business for more than one year are exempt from this provision.

Section 4 relates to applications which must contain the names and address, (2) the routes, (3) description of vehicles, (4) statement of assets and liabilities and other information which the state or Interstate Commerce Commission might require. Sections 5, 6 and 7 relate to hearings on applications, decisions and appeals from such hearings and transfer of certificates which are all provided for.

Must Show Responsibility

The two major sections of the bill (8 and 9), relate to bonds which all companies must supply either with sureties or where financially responsible they may carry insurance and where authorized and if financially responsible may be excused from such bond, under certain stipulations. Section 9 provides that all rates, fares and charges must be just and reasonable and that tariffs shall be prepared and filed and posted in the manner prescribed by the commission.

The bill would empower the I.C.C. to promulgate a uniform system of accounts to be used by motor carriers and requiring after the effective date thereof, motor carriers to conform therewith. The boards or the commission granting any certificate would be requested to supervise and regulate every motor carrier operating under such certificates and to require reasonably continuous and adequate service at just and reasonable rates.

Fines and penalties are provided for failure to comply with its terms and ample provision is made for appeals from hearings. To the states Section 18 expressly reserves the right of the states to regulate intrastate business as formerly.

66,342 Miles of Road Added With U. S. Aid

WASHINGTON, March 28—A total of 66,342 miles of Federal-Aid highways has been constructed in the United States since the inception of Federal-Aid in 1917 up to March 1 of this year, according to figures of the Bureau of Public Roads. Of this sum, 5385 miles have been completed since June 30 of last year. At the present time, 12,257 miles are under construction and 1849 additional miles have been approved in the states for construction. There is available at the present time a total of $20,111,834 of Federal-Aid funds allotted among the 48 states for highway construction work, for the fiscal year of 1928, ending July 1.

House Moves Action on Pool-Buying Bill

WASHINGTON, March 28—The third step in the passage of the Newton bill, which authorizes pool buying under the Webb-Pomerene Act, was taken up this week when the House rules committee authorized a special rule permitting immediate consideration of the bill (H.R. 8927). The bill, following its introduction early in February, was favorably reported by the Judiciary Committee, on Feb. 15.

Under the terms of its measure, the rubber and automobile industry will be permitted to pool their resources and purchase crude rubber as a unit.

During the hearings on the measure before the judiciary committee, it was endorsed by Secretaries Hoover and Jardine, Henry Ford, John J. Raskob, Charles B. Seger, president of the U. S. Rubber Co., Harvey S. Firestone, and other representatives of the two industries. It is expected that the measure will be considered Saturday.

Halward G. Westmore

MILWAUKEE, March 24—Halward G. Westmore, general foreman of the A. O. Smith Corp., Milwaukee, and identified with the industry as an expert machinist and machine designer since 1895, died March 19 at the age of 75 years. He was a native of Norway and came to America in 1863. He is credited with a large part in the development of the automatic pressed street frame shop of the Smith company.

Howard B. Sherman

BATTLE CREEK, MICH., March 24—The death of Howard B. Sherman, founder and president of the American Stamping Co., this city, is announced by the company.

Willys 1927 Profit Rises to $6,424,002

Volume of Business for Year $153,119,519—Sales Total 184,127 Cars

TOLEDO, March 27—On a total volume of business of $153,119,519 in 1927 the Willys-Overland Co. earned a net profit after all charges, but before preferred dividends, amounting to $6,424,002, or equivalent to $2.04 a share on outstanding common stock after the preferred dividends, according to the statement to stockholders by President John N. Willys today. Earnings in 1926 were $1,819,690.

Gross profit was $25,543,187 and other income added $824,876. Expenses for selling, general, administrative accounts, bad debts, dismantling, rearranging, miscellaneous losses and interest amounted to $19,036,827 and provision for Federal taxes totaled $989,716. The company paid $1,185,324 in dividends to preferred stockholders and $5,238,679 was added to the surplus bringing it to $30,243,998 at the close of the year.

The balance sheet showed $12,409,699 cash at the close of the year. Total current assets were $35,718,617, as against current liabilities of $7,287,019. Plants are carried at $49,874,261 less $19,254,968 depreciation. Total assets are $72,988,817. Inventories were carried at $20,514,944. Mr. Willys pointed out that bonds and preferred stock to the amount of $1,750,000 had been retired and that $1,300,000 had been expended to build new body manufacturing facilities.

"Sales for the year were 184,127 automobiles," reported Mr. Willys. "This total, because of industry conditions particularly affecting producers of low priced automobiles, was somewhat below expectations, although it compared favorably with competitor totals.

$42,000,000 for Improvements

"During the last five years $42,000,000 has been applied for the purpose of rehabilitating equipment, developing products and providing additional capacity at the Toledo, Pontiac, Elmira and Elyria plants. This has been done to improve quality and to so lower production costs as to make it possible to compete on a price basis with any manufacturer.

"Asset account has only been increased by $3,233,000 since 1923 due to liberal depreciation and immediate charge-offs. These expenditures have resulted in doubling capacity."

Mr. Willys said March shipments would exceed by 4000 any month in the 20 years of Overland history. The schedule for April is underwritten by orders for immediate shipment. New facilities now nearing completion will add one-third to capacity.

Traffic Men Oppose Western Freight Rise

Would Have Action Await Report by I.C.C.—Will Confer on Loading

DETROIT, March 24—A number of important railroad matters affecting the automotive industry were taken up by traffic managers of member companies of the National Automobile Chamber of Commerce at a meeting here this week. Declaring there is no proper foundation for the proposal, based on a consideration of factors used in classifying freight, the meeting aimed at the Western Classification Committee a resolution against a 10 per cent increase in the classification of automobiles as proposed by that committee. The resolution declared that the proposal is particularly untimely, when the Interstate Commerce Commission is just concluding a two-year investigation which is expected to revise western freight rates to meet general revenue requirements and has not yet had time to render its report.

Progress was reported on an elaborate study which will develop all pertinent facts bearing on automobile shipping, based on the entire output for the month of April. The meeting had before it for consideration the rating elements that should prevail on a large number of automobile parts, including gear frames, hood clips and handles, steering gear assemblies, fibreboard body panels, axles, tool kits, mirrors, velours.

Following a suggestion made by G. R. Lovejoy, chairman of the leading rules committee of the American Railway Association, a special committee was appointed to confer with the carrier's representatives on certain features of automobile loading into freight cars, which have a direct bearing on their safety in transit. The remarkably small percentage of damage to automobiles while on the railroads is due to the close studies that have been made of this question.

Alfred Reeves, general manager of the N.A.C.C., addressed the meeting, stressing the importance of the traffic activities of the chamber through the meetings of the traffic managers.

Seagrave to Expand Plant

COLUMBUS, March 24—Plans for a large addition to the plant to relieve congestion in every department were approved this week by stockholders of the Seagrave Corp., manufacturer of motorized fire apparatus. Julius F. Stone was reelected chairman of the Board; H. B. Spain, president, and William E. Lee, secretary and treasurer. These officers with Fredrico Lage, Howard Blood, J. B. Lovelace, Francis J. Eberly, Harlston J. Hall, Reno R. Renfrow, Donald B. Smith and R. K. Dykeman were named directors.

John M. Howard

Newly appointed advertising manager of General Motors Truck Co. He has been identified with truck merchandising for 14 years

Rubber Action Waits Baldwin Statement

NEW YORK, March 26—The rubber market is now awaiting the forthcoming announcement of Premier Baldwin regarding the future of rubber restriction, according to F. R. Henderson Corp. Prices have settled at a fairly steady range but no decided trend is expected until definite and official information has been received.

Arrivals of crude rubber at New York from March 1 to 22 are estimated at 27,000 tons, and it is expected that arrivals for the entire month at all ports will exceed 38,000 tons.

Sees Baldwin Action Futile

PHILADELPHIA, March 26—With Dutch plantations now producing more rubber than those within the jurisdiction of the Stevenson Act, efforts of Premier Baldwin to create more stability in the rubber market are regarded as likely to be futile by A. A. Garthwaite, vice-president and general manager of Lee of Conshohocken. He expresses the opinion that permanent stability can only come when American buyers and both Dutch and British growers can get together on a platform of mutual interest.

Restriction Stirs Planters

WASHINGTON, March 28—The British Malayan rubber market is reported by Trade Commissioner August Brauer, of Singapore, as being on the decline and very irregular. Much dissatisfaction over the question of restriction of production is reported, and local opinion is about equally divided. Purchases by American rubber and automobile manufacturers are reported as being very light.

J. D. Tew is Elected Goodrich President

Hough Continues as Director —Graham is Named First Vice-President

NEW YORK, March 24—John D. Tew, former first vice-president of the B. F. Goodrich Co., was elected president yesterday to succeed Harry Hough, whose resignation was accepted at a directors' meeting. T. G. Graham was elected first vice-president to succeed Mr. Tew. Mr. Hough remains a director and a member of the executive committee. T. B. Tompkins, controller, and V. I. Montenyohl, treasurer, were elected directors.

These developments were regarded as a continuation of important shifts which have taken place at intervals since the deaths of Bertram G. Work, who was chairman of the board and president, and Lorenzo D. Brown, formerly vice-president and treasurer of the company. As a result also of the resignations of F. C. Van Cleef as secretary, last September, and of W. O. Rutherford as vice-president, early this year, new men have entered the affairs of the company, both as regards the board of directors and the higher executive staff.

Since the election of David M. Goodrich as chairman of the board, Mr. Hough as president and Mr. Tew as first vice-president, on Sept. 27 last, several other shifts have been made. S. M. Jett was elected secretary on Sept. 29 to succeed Mr. Van Cleef and T. B. Tompkins was selected for the vacant controller's post on Oct. 17. On Jan. 3 of this year George M. Moffett, T. G. Graham and S. M. Jett were elected directors, and Joseph R. Swan, president of the Guaranty company, was elected to the board on Jan. 25.

Seeks Bar Truck Stand

NEW YORK, March 24—Pointing out that states are now well able to control public carrier motorized service, C. B. Baldwin, chairman of the highway transportation committee of the National Industrial Traffic League, urged the committee on commerce of the American Bar Association to go on record as opposed to the bill now pending in Congress, which he called a reprint of the Comings-Parker bill. The subject was taken under advisement.

American Metal Builds

MILWAUKEE, March 24—The American Metal Products Co., manufacturer of Ampco bronze bearing metal, billets, forgings, etc., has placed contracts for the construction of a one-story addition, 80 x 100 ft., to its main foundry. Improvements also are being made in the forge shop and rolling mill for the extension of the line of products to include sheets, wire, etc.

G.M. Truck Shows Gains by Vocations

Sales to Florists Rise 130 Per Cent—Urges Cost Keeping Records

DETROIT, March 26—An analysis of 1927 sales made public by General Motors Truck Co. shows deliveries 101 per cent greater than in 1926 for the entire line, including the Pontiac-powered series in the light duty field, the Buick-powered series in the medium duty range, and the heavy duty series.

Topping the list of sales-gains by vocations, are sales to florists who in 1927 bought 130 per cent more General Motors trucks than in 1926. Next come the gas and oil companies with a gain of 101 per cent. Three vocations are closely grouped, for third, fourth and fifth places—furniture, 96 per cent; bakers, 95 per cent, and groceries and food products, 92 per cent.

Sales increased 52 per cent to all classifications of bottlers; 48 per cent to hardware users; 42 per cent for each of two classifications—creameries and dairies, and laundries and cleaners. A 38 per cent increase was registered in the general haulage field; contractors, 25 per cent; public utilities, 17 per cent; and 11 per cent in the coal and ice trade.

O. L. Arnold, vice-president in charge of sales, declares that the keeping of accurate records on operating costs is becoming more and more the practice among truck users in every vocation. This is accompanied by a greater tendency toward standardization he states, even with businesses employing but two or three trucks, and also where one business requires equipment of several different capacities.

Indiana Truck Sales Gain

MARION, IND., March 26—Indiana Truck Corp. reports sales in February as 69 per cent larger than in February last year and double those of January this year. O. Ray Cuppet has been appointed sales manager for the Ohio district, coming to Indiana after service in similar capacity for Ruggles and Republic.

La France Sales Gain 60%

ELMIRA, N. Y., March 26—Commercial truck sales by American-La France & Foamite Corp. in the first two months this year were 60 per cent higher than for the same months last year. Sales of the 1½ to 2 ton model introduced at the national shows are above expectations, C. B. Rose, president, said.

Germany to Ban Solid Tires

WASHINGTON, March 28—A movement is now on foot in Germany to ban all solid rubber tires, according to a cable to the Department of Commerce, from its commercial attache at Berlin. It is expected that an order will go into effect April 1, prohibiting new trucks with solid tires, and on July 1 prohibiting the use of trucks now in use which have solid rubber tires. At the present time, only two-axled trucks weighing over three tons may carry two elastic solid rubber tires, in addition to four pneumatics. The object of the proposed regulation is the protection of German highways.

Stewart Arranges Deal for Texas Representation

BUFFALO, March 26—Stewart Motor Corp. has signed a selling agreement with the Wichita Falls Motor Co. for the sale and servicing of Stewart trucks in the Wichita Falls company branches. The Wichita Falls company manufacturers a line of heavy duty trucks and maintains branches in four Texas and two Oklahoma cities.

This is no sense a financial merger of the two companies, T. R. Lippard, president of the Stewart company, said. It is an arrangement between the two companies which gives Stewart more sales outlets and in turn permits the Wichita Falls company to offer a wider range of vehicles.

Approves Uniform Traffic Code

NEW YORK, March 24—The American Engineering Council has prepared a report recommending uniform street signs, signals and markings for traffic control throughout all cities in the United States. The council has been working in cooperation with the Hoover Conference on Street and Highway Safety and believes that the time is not far off when uniform traffic light systems, at least, will be adopted throughout the country.

Deere Adds Factory Unit

WATERLOO, IOWA, March 24—A factory unit, 120 x 120 ft., will be erected this spring at the John Deere Tractor Co. plant here, which only recently opened a machine shop and assembly plant, 120 x 300 ft. The first tractor, except for demonstration machines, was shipped last week.

Graham-Paige Pays Insurance Bonuses

First Half Million Placed on Retail Salesmen as Contest Awards

DETROIT, March 26—Half a million dollars' worth of insurance has been placed by the Graham-Paige Motors Corp. to cover 500 retail salesmen who have proved their value to the company through their sales records, and insurance will be placed for other salesmen as they demonstrate their worth.

Thousand-dollar policies were mailed this week to the 500 salesmen who qualified by their records in a special sales contest that began last August and closed with the end of the year. Hereafter, $1,000 insurance will be placed for every salesman who sells 10 cars in any half-year period beginning Jan. 1 and July 1. Moreover, any salesman who is already insured will receive an additional $1,000 coverage upon his selling his quota of cars. The policy may thus be added to until $5,000 total coverage is won.

The company pays all the insurance premiums and the salesman receives all the benefits of the insurance as long as he remains in the employ of a Graham-Paige dealer. The policies, which are issued without requiring a physical examination of the salesman, cover death and disability.

Receiver Awarded $15,400

PEORIA, ILL., March 24—Judge Louis FitzHenry in Federal court, has allowed L. L. Harr, former receiver for the E. H. Wilson Co., Moline, body manufacturer, $15,400 for his services as receiver of the plant prior to its sale to the Moline Mfg. Co. The action of the court releases about $300,000 held in banks to the syndicate headed by James P. Pearson, which organized the new company and is now operating the plant.

New Mexican Roads Yield Metal Harvest to State Magnetic Picker-Up Equipment

ALAMOGORDO, N. M., March 26—Operated by the New Mexico highway department, a magnetic picker-up of nails and other steel and iron objects has accomplished surprising results upon the roads of Otero County. It is stated that a total of 760,000 tacks and nails has been gathered by this machine. In the Orogrande section one mile of highway yielded a total of 110 lb. of metal.

At the rate of 320 punctures to the pound of tacks and nails, which was the number in the count there, Orogrande offered 35,200 possible punctures in less than one mile.

In the Pecos Valley the machine gathered 1550 lb. of iron from the state roads and from Roswell, via Tularosa and Alamogordo to Orogrande, 868 lb. were gleaned from one side of the road alone.

Where all these objects came from is a mystery. The fact that most of the highways often traverse regions that are thinly populated and where it would not be supposed there was an excess of tacks and nails makes it all the more strange that so many of them should have been gathered by the magnetic machine. Its operation is proving of enormous economic benefit to automobile travelers and the work of the garages has been diverted.

Steel Mills Making Concessions on Price

Full Finished Sheets Hold 4.15 Cent Level With Capacity Operation

NEW YORK, March 29—With the approach of the year's second quarter it is plain that compromise conditions have set in with reference to the price advances on steel announced several months ago and supposed to apply to second quarter business. With the exception of full-finished automobile sheets, the 4.15 cent price for which denoted not so much an advance as the reinstatement of a price level that had prevailed up to the time that last year's demoralized market conditions set in, buying appears to be at prices halfway between producers, advanced quotations and the lower fourth quarter 1927 levels.

The 1.90 cent price on steel bars applies to small lots, but there is little difficulty in finding sellers at 1.85 cents, and some consumers appear to be covered for good-sized tonnages at 1.80 cents. Contrasted, however, with conditions during the last quarter of 1928 when 1.75 cents was the top-price, this situation shows marked improvement from the producers' point of view. There are undoubtedly sales of black and blue annealed sheets at the full prices quoted, but these apply nearly always to small lots.

Production and shipments continue at a very satisfactory rate. Full-finished automobile sheet specialists continue to operate at virtual capacity with an encouraging backlog of orders. The recent advance in hot-rolled strip-steel prices, understood to apply to second quarter business, has served to bring out a fairly heavy tonnage of orders at the old prices, while buyers had an opportunity to cover at these figures, and it is thought that a good deal of this steel is earmarked for second quarter requirements.

Makers of automotive alloy steels are enjoying a fair run of orders. All in all, steel is passing into automotive consumption at a moderate advance in prices over those which prevailed three months ago, and discussion of price is no longer so much the market's outstanding topic as it was earlier in the year.

Pig Iron—Shipments on account of old contracts are going forward in good volume to automotive foundries. Some blast furnace interests look for another buying movement next month but the majority opinion is that it will be the middle of May before it will materialize. Meanwhile the market rules quiet and easy.

Aluminum—Routine conditions prevail. Imports continue light. Warehouse stocks are ample. Many automotive consumers buy in very small lots, but when they do order, want the metal rushed to their plants. Secondary metal meets with fair inquiry. Prices are entirely unchanged, the market's tone being steady.

Copper—While some improvement is noted in the demand for automotive brasses, fabricators are not greatly interested in the copper market. Paucity of foreign demand continues to depress the copper market which continues to call for the support of producers.

Tin—The tin market has recently forcibly brought home to consumers the truth of the old axiom that what goes down must go up again. There was considerable consumer buying at the higher levels.

Lead—Fair consuming demand is noted. The market rules steady.

Zinc—While demand is not very impressive, producers show little inclination to press metal for sale at prevailing prices.

Higher Hardwood Prices Lower Buying Volume

ATLANTA, March 27 — Lumber manufacturers and wholesalers in the Atlanta market advise that the sale of hardwoods to automobile and body industries was in lower volume the last half of March than the first half. One reason for lack of advance buying has been a stronger price tendency of late, for mills are unable to operate actively because of unfavorable weather, and having little surplus hardwood in the yards are marking prices upward. Leading call from automotive trades is for thicker dimensions of No. 1 and select white ash, which is the second best grade, with only a slight call reported for FAS ash, which is the best grade. There is also some call for thicker dimensions of maple and elm in the No. 1 common grade.

Carter Completes Units, Installs Test Equipment

ST. LOUIS, March 27—Growth in volume of car equipment business, necessitating night and day operation for several months past, has led to large plant additions by Carter Carburetor Corp. of St. Louis. Construction is just being completed on modern reinforced concrete and steel additions which double the plant area. These are the first new units of a general plan for quadrupling the factory space.

A prominent feature of the new plant is the complete dynamometer installation, pronounced among the finest of its kind. Other features include the production flow meters, designed and installed by Carter engineers to make possible individual flow testing of the entire Carter production, estimated at 2,000,000 for 1928.

Ruling Hits Body Builders

WASHINGTON, March 24—According to advices received by the automotive division of the Department of Commerce, automobile body builders of Montevideo, Uruguay, have petitioned the city to rescind a recent ruling limiting the number of buses. The builders say the enforcement will throw more than 500 people out of work and will result in heavy financial loss because of large investments in shop equipment and the further fact that they are committed to accept delivery of materials.

Financial Notes

General Electric Co. reports earnings for 1927 of $48,799,488 as compared with $46,672,498 in 1926. Orders received during the year totaled $309,784,623 as against $327,400,207 in 1926. Unfilled orders at the end of the year totaled $68,916,000 compared with $72,297,000 the year previous. Current assets at the close of 1927 totaled $252,668,341 against $264,065,167 the year previous. Cash stood at $77,393,006 against $78,601,549; government securities $76,371,000 against $68,935,000; receivables $33,969,497 against $54,889,207, and inventories $67,213,705 against $65,295,154.

Packard Motor Car Co. and subsidiaries report net profit of $10,140,535 after all charges for the six months ended Feb. 29. This is equivalent to $3.37 a share and compares with $5,909,038, or $1.96 a share, for the same period a year ago. Net income of $10,140,535 for the first half of the current fiscal year sets a new record, the previous high record for a similar period being $8,002,357 for the corresponding period of 1926. Net income for the whole of that year was $15,843,586.

B. F. Goodrich Co. will ask stockholders at the April meeting to ratify an increase in authorized common stock from 750,000 to 1,000,000 shares. This increase is proposed to make possible an employee stock ownership plan which was approved at the last directors' meeting.

American Bosch Magneto Corp. reports net profits after all charges in 1927 of $469,174, equivalent to $2.26 a share on outstanding stock. This compares with $448,319, or $2.16 a share, in 1926. Net sales in 1927 totaled $7,975,027 against $12,510,222 in 1926.

Ajax Rubber Co., Inc., reports net loss for 1927 after all charges of $1,990,698. This compares with net loss of $292,808 in 1926.

Durant Motors of Canada reports net profit in 1927 of $357,536 which compares with $234,593 in 1926.

Hupp Motor Car to Pay Quarterly Stock Dividend

NEW YORK, March 27—Hupp Motor Car Corp. directors have declared an initial quarterly stock dividend of 2½ per cent and the regular quarterly cash dividend of 35 cents a share, both payable May 1 to stock of record April 14. It was indicated the stock had been placed on a 10 per cent stock dividend basis for the year though no action on dividends beyond the initial quarter was taken.

Sales of cars in the first two months of the year were 8836 against 6855 in 1927. Net income for the first two months was $848,719 before Federal taxes against $204,422 in the corresponding 1927 period.

Gardner Gets Chassis Contract

ST. LOUIS, March 27—Gardner Motor Co. has been awarded a contract for 500 chassis to be delivered by June 1 to a St. Louis ambulance manufacturing company.

Carolina Sales Gain in First 2 Months

Ford in Thirteenth Place With 118 in Early Year Registrations

RALEIGH, N. C., March 24—Sales of new automobiles in North Carolina during the first two months of this year are larger than the first two months of last year, according to figures computed in the state department of revenue. February sales totaled 4396.

Chevrolet led the advance with a total for the two months of 2908 cars. Pontiac was second with 684 sales, and Essex third with 601. Ford ranked thirteenth. Totals by other makers were:

Chrysler 585; Dodge 501; Buick 488; Whippet 351; Star 175; Hudson 165; Nash 153; Oakland 141; Oldsmobile 127; Ford 118; Studebaker, 77; Hupmobile 67; Packard 53; Durant 50; Erskine 46; Willsy-Knight 31; La Salle 26; Cadillac 24;

New Jersey Shows Gain

NEW YORK, March 24—Sales of motor vehicles in the state of New Jersey during February amounted to 7965 as compared with 6730 in the same month a year ago, according to Sherlock & Arnold. Total sales for the year up to the end of February amounted to 12,299 as compared with 13,324 for the previous year.

Michigan Sales Increase

DETROIT, March 24—A total of 7657 new passenger cars were titled in Michigan during January according to figures compiled by the Michigan Automotive Trade Association, compared with 7494 with the corresponding month of last year. New trucks titled during the same month aggregated 574 units compared with 1213 a year ago.

Duplex Reelects Officers, Plans Heavy Duty Model

LANSING, March 24—At the annual meeting of the directors of the Duplex Truck Corp., officers were reelected for the coming year. Joseph Gerson is president and general manager; Harry F. Harper, vice-president, and Andrew Langenbacker, secretary and treasurer. These officers and E. C. Shields, John W. Harrer, Harry M. Lee, and A. W. Pratt compose the board of directors. The company will introduce a new model with a capacity of from 5 to 7 tons. This gives the company five models: 1½, 2, 3½, and the larger heavy duty truck.

Lifts Mexican Plane Ban

WASHINGTON, March 28—Effective at once, commercial airplanes which have heretofore been forbidden, may be exported into Mexico, according to an announcement of the State Department. Since 1926, it has been necessary for manufacturers desiring to ship airplanes of purely commercial character into Mexico to obtain an export license. This is no longer necessary. Military airplanes, however, remain under an embargo, and may be exported into Mexico only under an export license.

North Carolina Invests $5,000,000 in Sales Rooms

CHARLOTTE, N. C., March 24—The movement, now apparently general throughout the automotive trade, for "better dealers and better merchandising methods" is reflected in the wave of new building activity for automobile dealers in North Carolina. Reports from the principal cities and towns of this state, compiled here, indicate approximately $5,000,000 is being invested in new structures which will provide more efficient facilities for the sale and servicing of motor cars.

In the course of a ten-day swing about this state, it was observed that at Asheville and Charlotte half a dozen concerns in each city have just occupied or soon will complete handsome establishments. The building activity is not confined to the larger towns, however, for many such concerns in the small towns, where even a $35,000 structure makes a good showing, are providing themselves with better places in which to do business.

Auto-Lite Reelects Officers

TOLEDO, March 27—Officers and directors of Electric Auto-Lite Co. were reelected at the annual meeting today. President C. O. Miniger reported that the company would break all records for similar periods in the first and second quarters this year and that the outlook for the last half was good. Estimates are that net earnings will pass $1,000,000 in the first quarter.

A.E.A. Board to Meet

CHICAGO, March 28—A meeting of the board of directors of the Automotive Equipment Association has been called for April 2 and 3 to consider questions dealing with the relationship of the Greater Market Development to the other activities of the association.

Chrysler Holds Show Week

DETROIT, March 26—Chrysler dealers throughout the country will hold Chrysler Display Week in their respective showrooms during the week of April 2 to 8. Besides the various body types displayed on the three chassis models, Chrysler engineering details introduced since the Chrysler car made its appearance four years ago will be featured.

Western Metal Builds

MILWAUKEE, March 24—Western Metal Specialty Co., manufacturer of sheet metal products, is building an addition to its plant.

Commercial Credit Signs With Willys

Takes Over Dealers Finance Company and Arranges New Payment Plan

NEW YORK, March 26—The Commercial Credit Co. of Baltimore has absorbed and consolidated the assets of the Dealers Finance Co. of Toledo, which has been financing retail sales of various Willys cars and which was formed a few years ago by interests close to the Willys-Overland Co.

Commercial Credit has entered into contracts with the Willys interests which cover the national financing of time payment sales on Willys-Knight, Whippet, Falcon-Knight and Stearns-Knight cars on a plan which, it is said, will be available to all branches, distributors and dealers of these cars throughout the United States. Details of the plan are not yet available.

These contracts, which cover a period of years, should net the Commercial Credit Co. from $25,000,000 to $40,000,000 a year, in the opinion of A. E. Duncan, chairman of the board.

Commercial Credit Co. and affiliated companies did a business in automobile sales last year of approximately $204,000,000 and show every indication of doing an even larger volume of business this year.

Chevrolet to Complete Atlanta Plant in April

ATLANTA, March 27 — Chevrolet Motor Co. has almost completed its large new assembly plant here and officials of the Southern branch advise that present indications are the plant will be fully completed some time during April. It is one of the largest plants of the kind in the Southern States, erected at a cost of about $2,225,000, including a main assembly unit of 366,600 sq. ft., an office building, a Fisher body unit and a parts unit. The company expects to employ about 2000 people in the plant when it is in operation.

Makes Rubber Substitute

SAN FRANCISCO, March 28—The Natural Bitumen Products Corp. of this city, has placed on the market a rubber substitute, composed of pure bitumen, taken from the deposits at the northern end of Great Salt Lake, and reclaimed rubber from discarded automobile tires and other sources. The proportion of composition is given as 60 pounds of bitumen to 14 pounds of reclaimed rubber. While tires made from this composition are reported as in experimental use, its main purpose, according to the manufacturers, is in hard-rubber, such as battery boxes, switch plates, insulation and corner plates, with equal service as soft rubber for running-board and floor mats.

Mexico Organizes Good Roads Congress

WASHINGTON, March 28—Announcement that a good roads congress will be held in Mexico City the latter part of this year has been made to the Department of Commerce by Commercial Attache George Wythe. He informs the department that the exact date has not been set. State governments and private organizations interested in the construction of good roads will be represented at the congress, in addition to the Federal Government.

The congress is being organized under the auspices of the Mexican National Highway Commission, with the cooperation of the Treasury Department and Department of Communications and Public Works. The purpose of the congress will be to coordinate the road building activities of the various states and to stimulate interest in the subject of good roads. It is proposed to hold an exhibition of road building machinery during the congress.

Brazil Plans Road Work

WASHINGTON, March 28—Announcement that three states of Brazil have passed laws providing for taxation on automobiles, the proceeds of which are to be used for road building and maintenance, has been made to the Department of Commerce. This action is regarded as an indication that the legislatures of the states are becoming interested in highway construction.

Associations Move Offices

NEW YORK, March 24—The Asbestos Brake Lining Association and the National Battery Manufacturers Association have moved their offices to 7 East Forty-Fourth Street.

Coming Feature Issues of Chilton Class Journal Publications

June 10—A. E. A. Summer Meeting Number — Motor World Wholesale

June 23—Engineering Issue—Automotive Industries

Brake Lining Association to Complete Ethics Code

NEW YORK, March 24—The Asbestos Brake Lining Association will hold its April meeting in Washington either on April 13 or April 20, according to an announcement just made by the office of the association.

It is planned at this meeting, which probably will be attended by officials of the Federal Trade Commission in an advisory capacity, to bring to completion the association plans for adopting a code of ethics. This code will include fair trade practices which should be of benefit to all users as well as distributors of asbestos brake lining.

The association is now ready to distribute the new 1928 Data Book of Clutch Facing and Brake Lining Sizes.

Iowa Buys Star Coaches

AMES, IOWA, March 24—The Iowa state highway commission this week let contracts for $350,000 worth of automotive equipment, tires, gasoline and lubricants for its 1928 building activities. Sixty-four Star coaches were purchased through the Dunlap Motor Co., Ames, in competitive bidding, for $527.50 each. The Kelly-Springfield Co., Des Moines, was awarded contract to furnish a carload of solid tires, 36 x 6, for use on trucks at $37.90 each.

Oakland to Stage "Open House" Party

DETROIT, March 24—The new Oakland All-American Six assembly plant and the Pontiac plant of the Oakland Motor Car Co., at Pontiac, will be thrown open for public inspection on April 17, 18, 19. The event will be the first "open house" held by the Oakland company and during the three days visitors will be conducted on directed tours which will take them through the new plant where particularly interesting operations will be explained.

Production at the plants during these days will be continued until 10 p.m. each night, and in addition to the inspection tours there will be many special features including dancing, musical concerts by the Oakland band, souvenirs and refreshments. Special placards will be placed on the various machines indicating the operation performed thereon, this will enable the visitors to see the complete machining and assembly of an automobile.

Yellow Now at Pontiac

PONTIAC, March 26—All manufacturing, sales and service operations of the Yellow Truck & Coach Mfg. Co. and subsidiaries are now transferred to the new plant here, effective today. All manufacturing activities will be carried on by General Motors Truck Corp. and all sales and service by General Motors Truck Co.

To Make Tank Bodies

GREEN BAY, WIS., March 24—The Wisconsin Fabricating Co. is establishing a department for the production of steel tanks for gasoline and oil trucks on a custom basis, in any size and for any make and type of truck chassis.

Calendar of Coming Events

SHOWS

All-American Aircraft Show, Convention Hall, Detroit.....April 14-21
American Electric Railway Ass'n, Public Auditorium, Cleveland...Sept. 22-28
American Society for Steel Treating, Commercial Museum, Philadelphia .....Oct. 8-13
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
Berlin .....Nov. 8-18
Brussels .....Dec. 8-19
*Chicago .....Jan. 26-Feb. 2
International Aircraft Show, Berlin, March 23-April 11
Layback, Jugoslavia .....June 2-11
Lille, France .....April 6-22
London, passenger cars .....Oct. 11-20
National Standard Parts Association, Cleveland Auditorium...Oct. 29-Nov. 3
*New York .....Jan. 5-12
Oran, Algeria .....April 1-May 31
Paris, passenger cars .....Oct. 4-14
Paris, trucks .....Nov. 15-25
Prague .....Sept. 1-9
Rio de Janeiro .....May 3-13
Tunis, Tunisia .....April 27-May 6
United States Good Roads Show, Des Moines .....May 28-June 1
Zagreb, Jugoslavia .....April 29-May 6

*Will have special shop equipment exhibit.

CONVENTIONS

American Electric Railway Ass'n, Public Auditorium, Cleveland...Sept. 22-28
American Gear Manufacturers Association, Hotel Seneca, Rochester, N. Y. .....April 19-21
American Society for Steel Treating, Commercial Museum, Philadelphia .....Oct. 8-13
American Society for Testing Materials, Chalfonte-Haddon Hall Hotels, Atlantic City, N. J. .....June 25-29
American Welding Society, Engineers Society Bldg., New York...April 25-27
Automotive Equipment Association, Grand Hotel, Mackinac Island, June 10-16
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
Chamber of Commerce of the United States of America, Washington May 8-11
National Association of Credit Men, Hotel Olympia, Seattle, Washington .....June 11-16
National Foreign Trade Council, Houston, Texas .....April 25-27
National Hardware Association of the United States, Metal Branch, Copley-Plaza, Boston .....May 3-4
National Safety Council, Central States Safety Congress, Kansas City April 23-25
National Safety Council, National Congress, New York .....Oct. 1-5
National Standard Parts Association, Hollenden Hotel, Cleveland, Oct. 29-Nov. 3
Overseas Automotive Club, Luncheons, Hotel Astor, New York April 12, May 10 and June 14
Society of Automotive Engineers, Chateau Frontenac, Quebec, June 26-29
Society of Industrial Engineers, Rochester, N. Y.....Oct. 17-19
United States Good Roads Association and Bankhead National Highway Association, Des Moines. May 28-June 1

A. S. M. E.

Cincinnati, Oct. 22-25—Machine Shop Practice.
Cleveland, Sept. 17-20—Fuels.
Detroit, June 28-29—Aeronautic Division.
Philadelphia, April 23-24 — Materials Handling Division, Benjamin Franklin.
Pittsburgh, May 14-17—Spring Meeting.
State College, Pa., June 14-16—Oil and Gas Power.

RACES

Atlantic City .....May 5
Belgium .....Aug. 12
Detroit .....June 3
France .....July 1
Germany .....July 15
Great Britain .....Sept. 22
Indianapolis, Hispano-Suiza and Stutz April 16
Indianapolis .....May 30
Italy .....Sept. 2
Spain .....July 29